A CAHNERS PUBLICATION

Brick & Clay RECORD

FEBRUARY, 1960

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Special...
A roundup on packaging and hauling of clay products

TARGET.... FOR TODAY AND TOMORROW

Bonnot Machinery — custom-tailored to your raw material and product needs — incorporates nearly "70 years of built-in integrity of performance" that assures *less down time and reduces maintenance expense* . . . . that adds up to *lowest cost per ton of finished product.* Engineering features such as CONSOLIDATED GEARING, yet with separate clutch controls, for pug mills and augers . . . SUPER GEARING AND BEARINGS . . . BEST PUGGING . . . THOROUGH DEAIRING — *all save trouble and improve production.*

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STEP AHEAD WITH BONNOT

Rugged Machines for Constant Low Cost Operation — BONNOT'S the Buy

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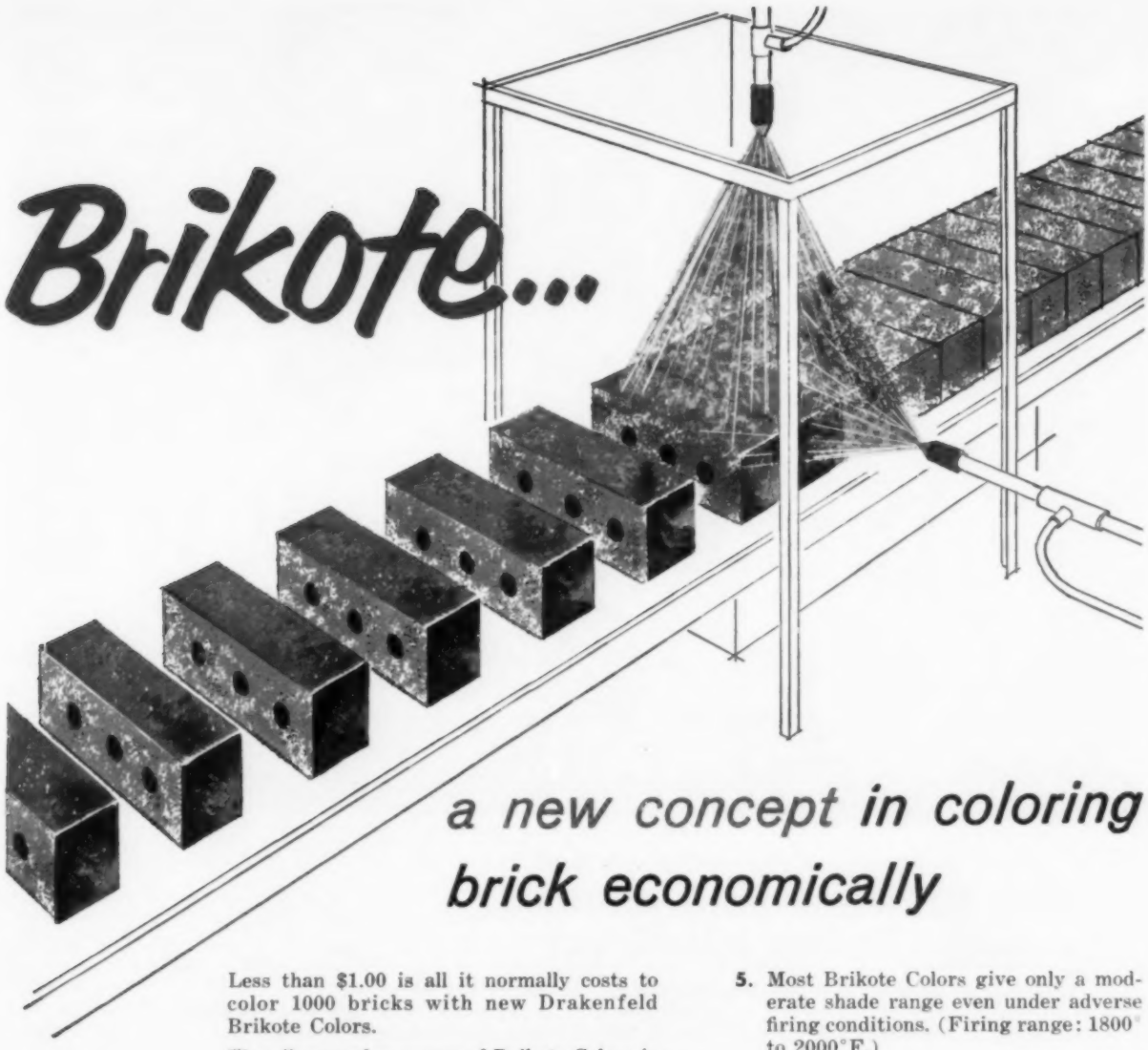

Brikote...

a new concept in coloring brick economically

Less than $1.00 is all it normally costs to color 1000 bricks with new Drakenfeld Brikote Colors.

The all-around economy of Brikote Colors is due to these important characteristics:

1. Exceptional opacity and coverage.
2. A very thin coat is adequate and does not alter the brick texture.
3. The colors suspend readily in water to insure even dispersal when sprayed. They are supplied in wet form, ready to spray.
4. Coated brick may be face set and fired immediately without danger of sticking.
5. Most Brikote Colors give only a moderate shade range even under adverse firing conditions. (Firing range: 1800° to 2000°F.)
6. A blend of various colored brick can be run by simply changing the color intermittently at the spray machine. With a proper spray gun battery setup, such blending operations do not hamper production speed.

Brikote Colors in traditional brick colors are augmented by new shades in the complete line. Matches are also available for manganese flash and zinc flash. Write for complete information or ask for on-the-spot cooperation from one of our field engineers.

CALL ON **Drakenfeld** YOUR PARTNER IN SOLVING COLOR PROBLEMS

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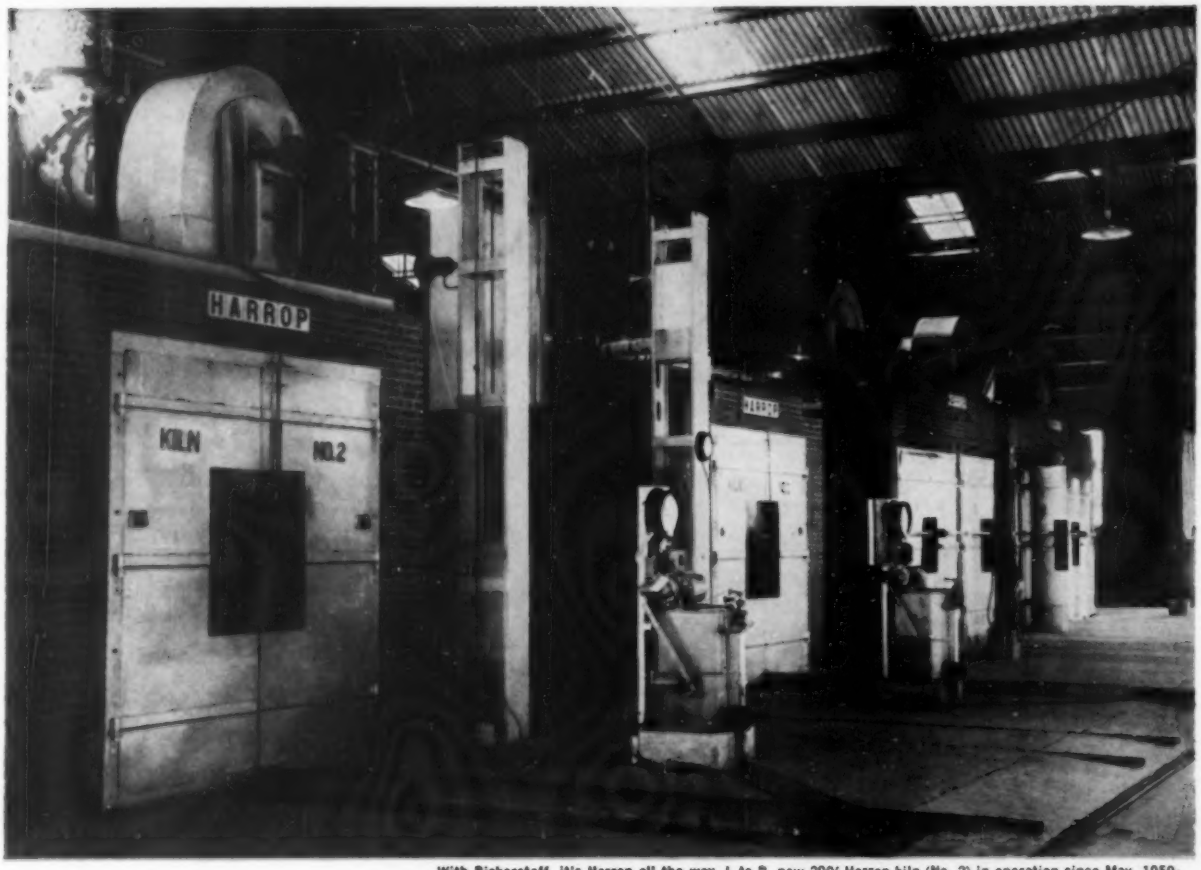

With Bickerstaff, it's Harrop all the way. L to R, new 290′ Harrop kiln (No. 2) in operation since May, 1959; original Harrop Kiln (No. 1), installed in 1955; new 136′ Harrop twin-tunnel dryer; original Harrop twin-tunnel dryer installed with Kiln No. 1. View shows discharge end of dryers, charging end of kilns.

Why Bickerstaff Brick specified a second Harrop installation

The original Harrop dryer and kiln installation for the Bickerstaff Brick Co., Columbus, Georgia, was profitable from the start. It had a design capacity of 50,000 8″ equivalents per day but, when needed, daily production peaked to 64,800. This is a healthy 30% bonus output of red and flashed red face brick, both cored and solid types.

When Bickerstaff decided to double capacity in order to handle increased sales volume, they wanted the new installation to match this record of efficiency. Naturally, they called in Harrop again to design and build the second dryer and kiln.

Frank Bickerstaff, Jr., President of the 70-year-old company whose products are well-known throughout the Southeast, reports: "Harrop designed and built extra efficiency, extra performance into our dryers and kilns. They proved it to us, twice-over."

Call in Harrop for new dryer, kiln or plant design, or modifications, that will assure you of efficient and profitable production. Our non-obligating consultation service brings you the benefits of 38 years of proven engineering and construction experience.

Work crew loads kiln cars directly from off-bearing belt. Each kiln normally handles 16 cars per 24-hour day, 3,600 brick per car. Normal daily production for these two Harrop dryer and kiln units averages 115,200 brick, at least 15% above design capacity.

Kilns discharge fired brick. Harrop Kiln No. 2 (foreground) differs from original kiln (left) it closely resembles by introduction of excess air burners ahead of firing zone. These air burners provide an even "heat-up," assure amazingly uniform shrinkage of these surface-clay brick.

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LEADING CLAY JOURNAL OF THE WORLD

Brick & Clay RECORD

A CAHNERS PUBLICATION

February, 1960 Vol. 136. No. 2

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THE COVER Semi-automatic packaging machine in use at Robinson Brick and Tile Co., Denver, Colo. This machine, a product of Link Belt and Acme Steel Co., is now also in use at the Owensboro, Ky., Brick and Tile Co. (Jan. Page 92,) and at Henderson Clay Products, Henderson, Texas.

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Brick—Drain Tile—Structural Tile—

Clay Aggregate—Terra Cotta—Roofing Tile

Refractories—Clay Pipe

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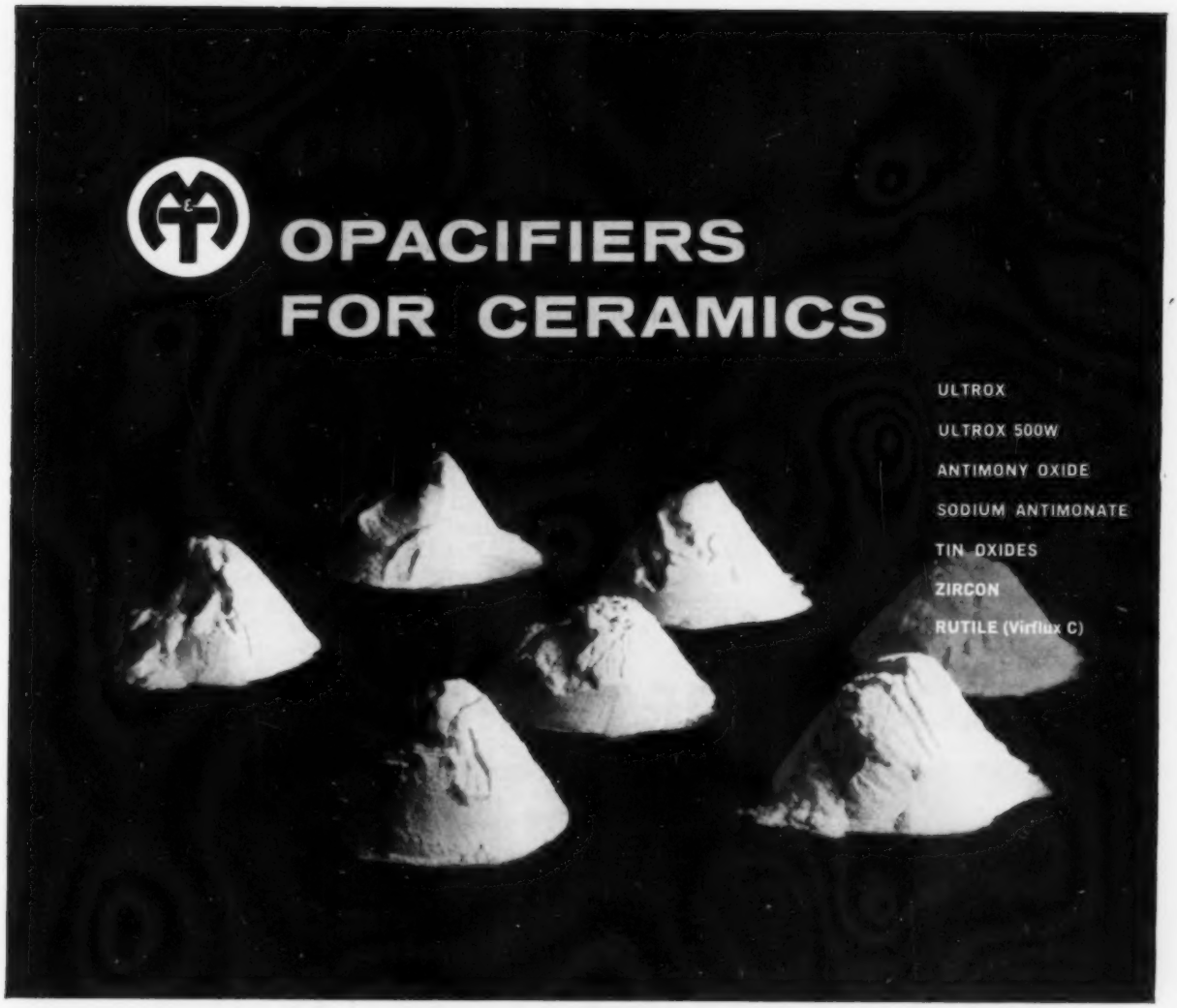

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ANTIMONY OXIDE This opacifier for enamels also adds to adherence. In glass batches, it acts as fining agent and decolorizer. Used, too, in orange or yellow ceramic colors.

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TIN OXIDE: special white Opacifier which gives warm white tint and maximum lustre to glazes. Used as color stabilizer, too.

TIN OXIDE: prime metal 99.9% tin oxide minimum. Excellent pure white opacifier. Component of yellow and red stains; color stabilizer.

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ZIRCON: Granular Source of zirconium oxide for glass batches. Improves refractories, molding sands.

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1 SKOOPER loading solves split coal seam problem

IOWA — a split seam of good quality bituminous coal created a real loading problem in large open-pit mine. Top seam — about two feet of coal — was separated from bottom seam by a two-inch layer of fire clay. Conventional shovel loaders mixed clay in with coal, caused too high an ash content. Solution — Koehring 205 Skooper! Its 7-foot level crowd took off top coal seam, fast, without mixing in clay. No ground grinding skid-turn action of tractor loaders, either, because full revolving Skooper swings through complete loading cycles without track movement.

15-yard truck loaded out every 3 minutes

TEXAS — Loading packed caliche out of stockpile, Skooper heaped 15-yard trucks in about three minutes. That's five yards a minute with an excavator which is basically a ½-yard machine!

400 tons an hour with only 64 horsepower

OHIO — On highway construction, Koehring 205 Skooper was clocked loading loose borrow into trucks. Time studies showed a production rate of 400 tons an hour for the 64 h.p. machine equipped with 2½-yard rehandling bucket!

2 Keeps production high at sand and gravel plant

UTAH — Loading pit-run material at a Utah sand and gravel plant, Skooper's continuous production dig-swing-dump cycles let operator load trucks at top efficiency all day long. No late-afternoon drop-off, common with front-end tractor loaders. Skooper power is concentrated on digging effort, not on traveling.

3 Canadian producer heaps 5-yard trucks in 2 swings

ONTARIO—With contract to supply aggregates to city for street improvements, Canadian sand and gravel company stationed Skooper at stockpile. 5-yard trucks were heaped to capacity, and on their way in just 2 scoops and 2 fast swings of the 2½-yard rehandling bucket! Soon as one truck pulled out, next truck spotted in on opposite side. No waste motion. Skooper just kept swinging from "standstill" position—loaded out to either side with equal ease, speed and efficiency. 7-foot level crowd action, plus high bucket reach, saves unnecessary crawler movement. Nothing like it on wheels or tracks!

4 Steady diet of foundry sand

ILLINOIS — Skooper owner has long-term contract to supply used foundry sand from industrial plant

.....FIELD REPORTS PROVE *there's*

KOEHRING

yard. He sells it to other contractors for use as subgrade material on parking lots, roads, etc. Skooper replaced a tractor front-end loader on this work. Owner reports Skooper not only compares favorably production-wise with the old machine, but maintenance and fuel costs are substantially lower! It's an ideal high-production application for full-revolving, free-swinging Skooper. Plenty of reach for loading the big, high-sided trailers, too! Clearance height under roll-over bucket is 12'-10" at beginning of dump — and more than 10 ft. after dumping.

5 Strips gravel deposit then loads it out

OHIO — Opening new gravel pit, operator teamed a Koehring Skooper with Koehring 8-ton Dumptors — a cost-cutting combination. During initial stripping, big, wide Skooper bucket easily handled large rocks and stump-strewn overburden with no material hang-up during discharge. Then its smooth 7-foot level crowd stripped off remaining overburden fast, clean, in flat, level cuts — exposed underlying gravel deposits with minimum mixing of materials. And the sand and gravel? Skooper loaded that out, too — heaped the 8-ton Dumptor in just a few passes.

Money-saving excavator-crane convertibility

For all its big-bucket versatility, Skooper is by no means a single-purpose tool! Base machine is the job-proved Koehring 205. Entire front end of the Skooper is removed as a complete unit when converting to any one of the alternate attachments: ½-yard shovel, hoe, ½ to ¾-yard clamshell, dragline, 10-ton lift crane. Alert Skooper owners are cashing in on this extra time and money-saving advantage. Saves buying or renting additional equipment.

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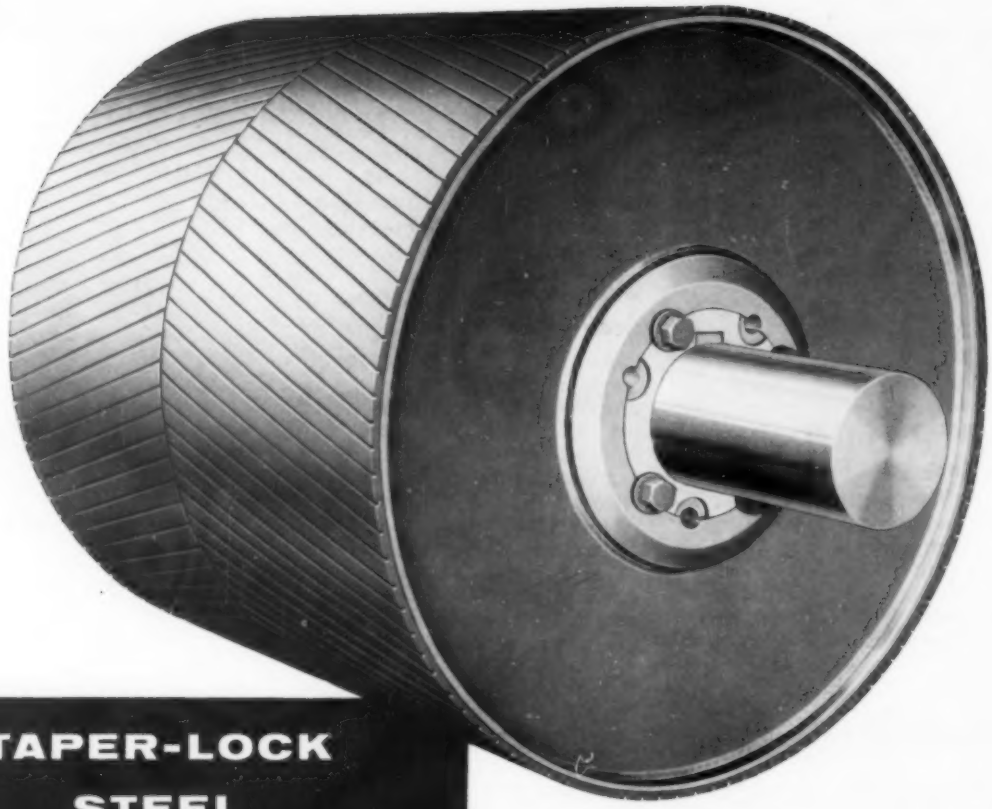

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Unmatched holding power on the shaft...

New mounting simplicity.

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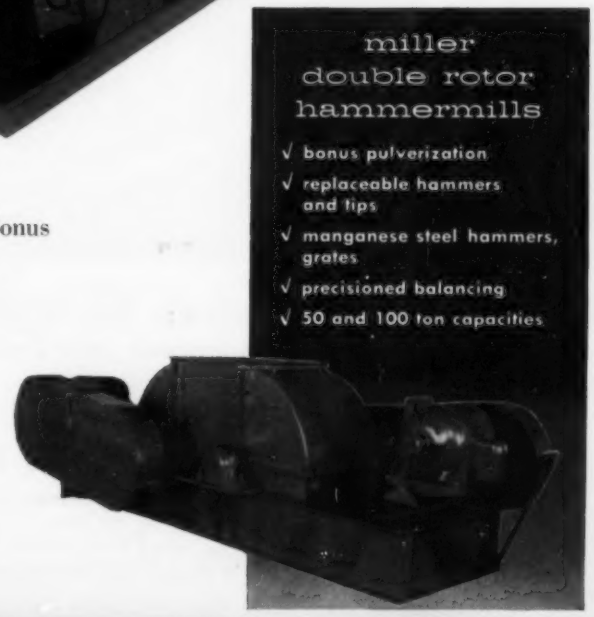

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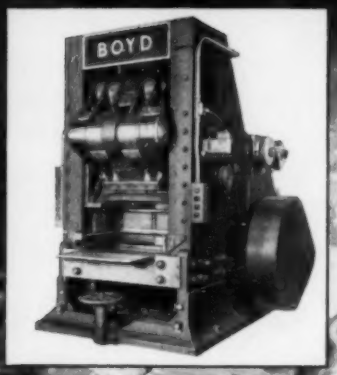

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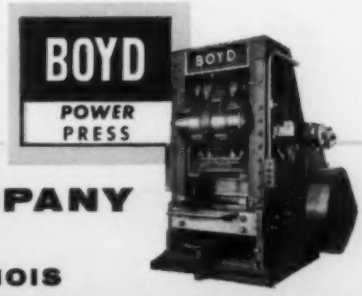

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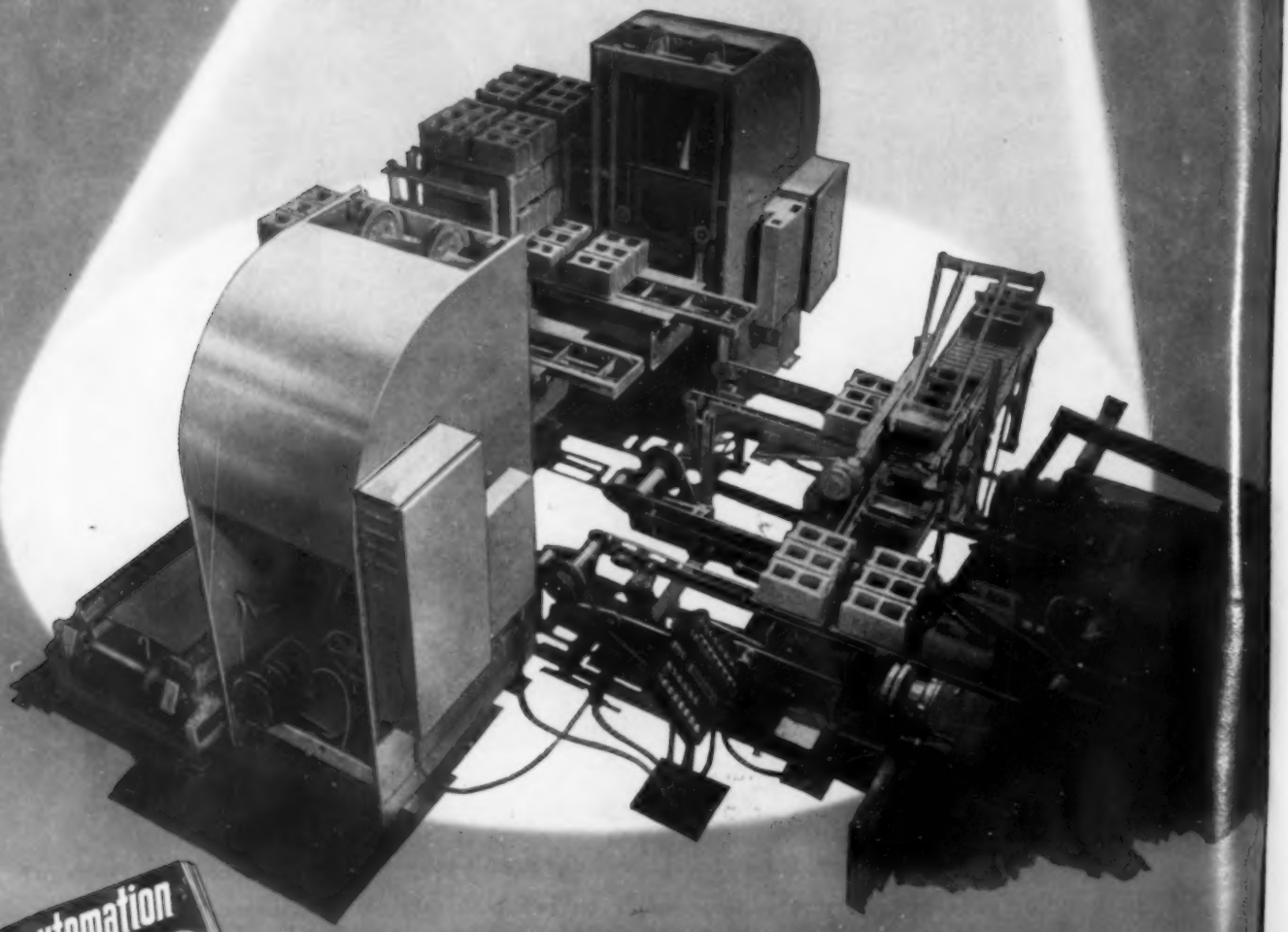

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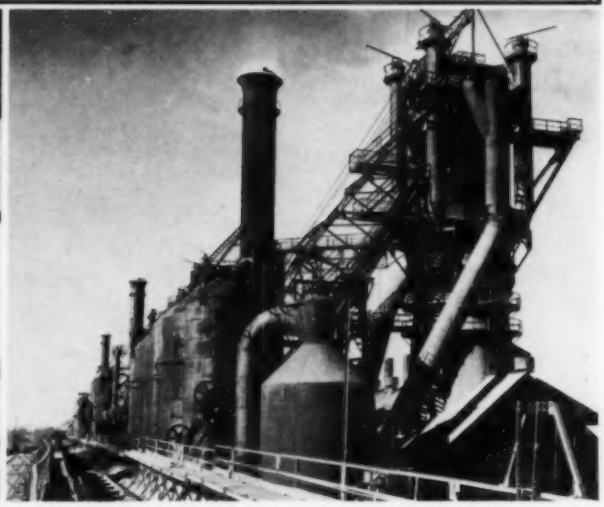

Blast furnace stoves constructed with Dragon Brand brick show little structural spalling and deformation.

Less hot load sag, spalling loss and slagging!

Dragon semi-silica brick resist thermal stresses because of exceptionally high refractoriness and ability to retain original size. Spalling loss is minimum! Dragon semi-silica assures longer life without vitrification or shrinkage even at high temperature limits. In hot load tests, with a load of 25 lbs. per sq. in. at 2460° F., Dragon semi-silica shows no deformation! Special load tests at 2640° F. show Dragon Brand deformation of only 0.7%—proof of high strength and deformation resistance under load at high temperatures! Dragon Brand brick are highly resistant to slagging for greater economy in service.

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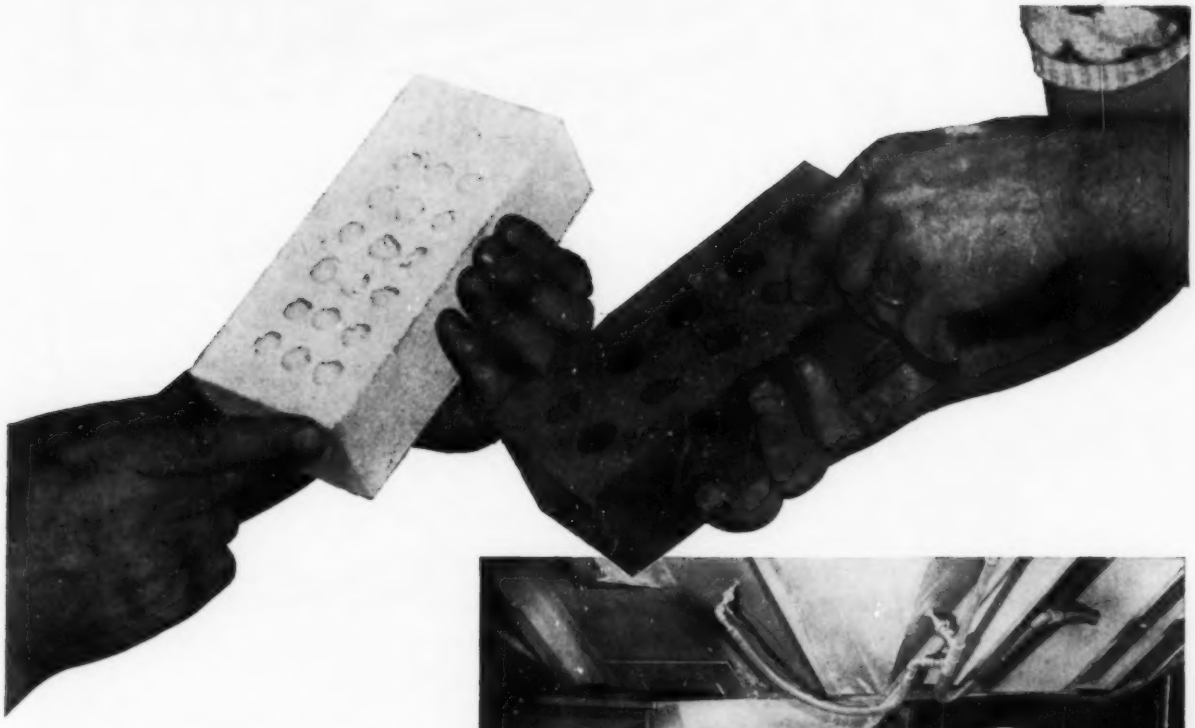


Exact proportioning creates colors customers want

The Stone Creek Brick Company, Stone Creek, Ohio, gets the exact color in every batch by proportioning brick ingredients with Jeffrey WAYTROLS.

JEFFREY WAYTROLS® automatically proportion brick ingredients

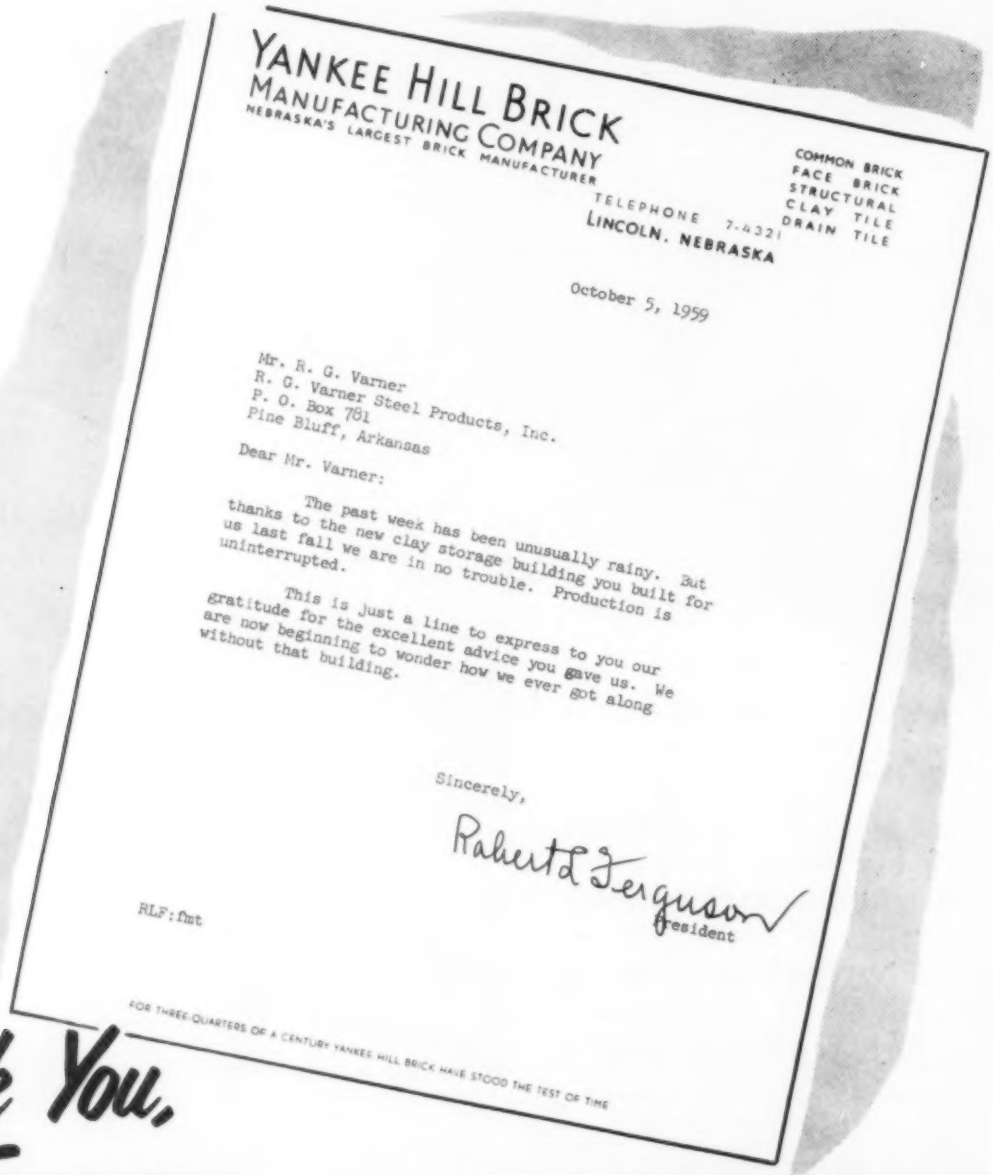
Giving the customer the color he wants helps sell bricks as well as automobiles. This need for accurate proportioning of materials explains why so many of these electric vibrating feeders are employed in so many industries.

In hundreds of processing plants, Jeffrey WAYTROLS are automatically weighing and delivering exact quantities for mixes going into every kind of product. The WAYTROL is a precision machine, designed for continuous service . . . sturdy, accurate and flexible. Rate of delivery is regulated through a weighbelt mechanism, but control is electrical, with instant response.

Catalog 941 describes the WAYTROL. The Jeffrey Manufacturing Company, 916 North Fourth St., Columbus 16, Ohio.

CONVEYING • PROCESSING • MINING EQUIPMENT . . . TRANSMISSION MACHINERY . . . CONTRACT MANUFACTURING

JEFFREY



YANKEE HILL BRICK
MANUFACTURING COMPANY
NEBRASKA'S LARGEST BRICK MANUFACTURER

COMMON BRICK
FACE BRICK
STRUCTURAL
CLAY TILE
DRAIN TILE

TELEPHONE 7-4321
LINCOLN, NEBRASKA

October 5, 1959

Mr. R. G. Varner
R. G. Varner Steel Products, Inc.
P. O. Box 781
Pine Bluff, Arkansas

Dear Mr. Varner:

The past week has been unusually rainy. But thanks to the new clay storage building you built for us last fall we are in no trouble. Production is uninterrupted.

This is just a line to express to you our gratitude for the excellent advice you gave us. We are now beginning to wonder how we ever got along without that building.

Sincerely,

Robert L. Ferguson
President

RLF:fmt

FOR THREE-QUARTERS OF A CENTURY YANKEE HILL BRICK HAVE STOOD THE TEST OF TIME

Thank You, Mr. Ferguson...

Our business has grown as a result of satisfied customers, and we are happy to count you among them.
Varco specializes in buildings for the Brick and Clay Industry—clay storage buildings, kiln buildings, brick shelters or complete plants.
More Varco structures are being erected than any other type.
There's a simple reason why: Varco builds it better . . . for less.
But you don't have to take our word for it.
Ask a Varco customer. You'll find them in over 30 states and Canada. We stand on their recommendation.

Varco

R. G. Varner Steel Products, Inc. P. O. Box 781 Pine Bluff, Arkansas

NOW! You can receive FREE information on:

1. Advertised Goods

2. New Products

Appearing in this issue...

HOW TO USE:

All you do is circle the number of the editorial item or the page number of the advertisement on this card, and mail it to us.

There are several refractories and insulation materials now serving the metal producing industry. Among these products are goose-lake, therm-o-flake and chem-brix. *Illinois Clay Products Co.*

20/Circle on Reader's Service Coupon

Walsh sets the pace with large clay reserves, improved research facilities and continued important additions to plants and equipment. From pit to lab to finished product under strictest standards of quality control. *Walsh Refractories Corp.*

21/Circle on Reader's Service Coupon

Improve your refractories with bonding clay, fire clay and airfloated clay. *Cedar Heights Clay Co.*

22/Circle on Reader's Service Coupon

Grefco is one of the largest opertors of tunnel and periodic kiln. It has a long experience with refractories for building and repairing kilns. *General Refractories Co.*

23/Circle on Reader's Service Coupon

Carolina kyanite has as high an alumina content as any naturally occurring aluminum silicate available. It has high temperature load bearing strength and its extra strength imparted cuts losses due to cracking and flaking. *Commercialores, Inc.*

24/Circle on Reader's Service Coupon

Contemporary design demands color. Architects and builders are willing to pay a premium for materials offering this design freedom. Quality materials can be developed for all types of color work. *Pemco Corp.*

25/Circle on Reader's Service Coupon

2-60

20 Illinois Clay Products Co.
21 Walsh Refractories Corp.
22 Cedar Heights Clay Co.
23 General Refractories Co.
24 Commercialores, Inc.
25 Pemco Corp.
26 Tote System, Inc.
27 Drakenfeld & Co., Inc.
28 Bickerstaff, Inc.
29 Lead Industries Association
30 Williams Patent Crusher & Pulverizer Co.
31 Builders Equipment Co.
32 Ferro Corp.
33 Kimberly-Clark Corp.
34 Chambers Brothers Co.
35 The Frank G. Hough Co.
36 Miller Equipment Co.
37 TAM Division National Lead Co.
38 Besser Co.
39 Westinghouse Electric Corp.
40 Stephens-Adamson Mfg. Co.
41 The North American Mfg. Co.
42 Minneapolis-Honeywell
43 The Bonnot Co.
44 Gladding, McBean & Co.
45 North State Pyrophyllite Co., Inc.
46 Harbison-Walker Refractories Co.
47 Koehring Co.
48 Swank Refractories
49 Oak Hill Fire Brick Co.
50 Allied Engineering Div. Ferro Corp.
51 Kyanite Mining Corp.
52 U.S. Hoffman Machinery Corp.
53 The Globe Brick Co.
54 Refr. Div. H. K. Porter Co., Inc.
55 North American Refractories Co.
56 Chas. Ross & Sons
57 Allis Chalmers
58 Dempster Bros.
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Page 37 Acme Steel Co.
Page 80 American Clay Machinery (Div. Huber-Warco Co.)
Page 73 American Pulverizer Co.
Page 36 Babcock & Wilcox Co.
Page 14 & 42 Besser Co.
Page 59 Bickerstaff, Inc.
Page 2 Bonnot Co. (The)
Page 66 Bradney Machine Co.
Page 46 Brick & Clay Record
Page 27 Builders Equipment Co.
Page 60 Chambers Bros. Co.
Page 67 Chase Foundry & Mfg. Co.
Page 13 Chisholm, Boyd & White Co.
Page 57 Clark Equipment Co.
Page 76 & 77 Classified Ads
Page 73 Dalster Concentrator Co.
Page 15 Denver Fire Clay Co.
Page 74 Des Moines Glove Mfg. Co.
Page 10 Dodge Mfg. Corp.
Page 3 Drakenfled (B.F.) & Co.
Page 79 Fate-Root-Heath Co.
Page 23 Fink Co.
Page 63 Garden City Fan & Blower Co.
Page 74 Hannon (F. R.) & Sons
Page 4 Harrop Ceramic Service Co.
Page 72 Hommel (O.) Co. (The)
Page 17 Jeffery Mfg. Co. (The)
Page 58 Kennedy Van Saun Mfg. & Engineering Corp.
Page 38 Kimberly-Clark Corp.
Page 8 & 9 Koehring Div.
Page 16 Lanley Co.
Page 7 Metal & Thermit Corp.
Page 11 Miller Equipment Co.
Page 74 National Paint & Manganese Co. (Div. Howe Sound Co.)
Page 40 North State Pyrophyllite Co.
Page 73 Orefraction Minerals
Page 25 Overstrom & Sons
Page 68 Pangborn Corp.
Page 65 Paris Mfg. Co.
Page 39 Pearne & Lacy Machine Co.
Page 67 Pemco Corp.
Page 71 Pilbrico Co.
Page 34 Raybestos-Manhattan, Inc.
Page 69 Robinson Ventilating Co.
Page 75 Rockfacer Co.
Page 12 Signode Steel Strapping Co.
Page 64 Simplicity Engineering Co.
Page 78 Steele (J. C.) & Sons
Page 56 Stoody Co.
Page 35 Titanium Alloy Mfg. Div.
Page 41 Towmotor Corp.
Page 70 Tyler (W. S.) Co. (The)
Page 6 Universal Atlas Cement Corp. (Div. U. S. Steel Corp.)
Page 72 Universal Vibrating Screen Co.
Page 18 Varner (R G.)
Page 65 Williams Patent Crusher & Pulverizer Co.

I'm also interested in those items shown in the **Advertisements.** Please have manufacturer send me literature and information.

Mfgrs Name _____

Mfgrs Name _____

NAME _____ TITLE _____

COMPANY _____

STREET _____

CITY _____ ZONE _____ STATE _____

This card void after April 30, 1960

The Tote System cuts material handling costs, improves quality control, and has more economical methods of bulk handling. There is substantially reduced labor requirements for handling and an elimination of recurring unit container costs. *Tote System, Inc.*

26/Circle on Reader's Service Coupon

The reds, yellows and blue used in coloring the bricks for the bright facades of buildings were manufactured by Drakenfeld. Sand colors, engobe stains, glaze stains, colored specks, and prepared glazes are available in a wide variety of colors. *Drakenfeld & Co., Inc.*

27/Circle on Reader's Service Coupon

Bickerstaff Forks are known as the do-it-all for brick handling. They proved useful in the moving of brick in and out of kilns, loads directly to freight car and has reduced labor cost. *Bickerstaff, Inc.*

28/Circle on Reader's Service Coupon

A new and improved structural material lead glazed, claybonded, light aggregate (vermiculite) offers many advantages. Its high strength is one major asset. It provides a new structural clay product for both interior and exterior use with integral color styling and a smooth, self-cleaning surface. *Lead Industries Association.*

29/Circle on Reader's Service Coupon

Reversible hammer mill with cover open features super strong reinforced steel plate frame, renewable wear-resistant manganese steel liners, heavy duty oversize forged steel rotor shaft, anti-friction roller bearings and complete accessibility to interior for quick parts changing. *Williams Patent Crusher & Pulverizer Co.*

30/Circle on Reader's Service Coupon

Superlite unloaders have proven fast-effortless-economical in operating efficiency. Save time and labor, reduce your truck fleet, lowest initial cost, speedy deliveries and low breakage. *Builders Equipment Co.*

31/Circle on Reader's Service Coupon

Wide known experience in techniques, processes and quality control for glaze, engobe, body stain, and other brick coatings with the use of inorganic colors which hold their uniformity, light and heat stability. *Ferro Corporation.*

32/Circle on Reader's Service Coupon

Add up to 50% to the life of your knives, augurs and etc. with the effective body lubrication you get with the use of Additive-A clay conditioner. Additive-A makes clay easier to extrude, lets you use less power, cuts down time and costs. *Kimberly-Clark Corp.*

33/Circle on Reader's Service Coupon

Hydraulic Ram Extruder designed for plastic refractories is 75-ton horizontal with self-contained hydraulic system with automatic controls for continuous or manual operation. *Chambers Brothers Co.*

34/Circle on Reader's Service Coupon

Stripping overburden, loading from the pit, unloading boxcars, stockpiling, feeding hoppers, mullers and batchers and etc. are some of the ways other modern clay, brick, ceramic and glass producers are taking advantage of adaptable, flexible and efficient Payloader tractor-shovels. *The Frank G. Hough Co.*

35/Circle on Reader's Service Coupon

An answer to more profitable production is to use a Cross-Flo Tunnel kiln. These tunnel kilns use controlled scientific cooling for high production. *Miller Equipment Company.*

36/Circle on Reader's Service Coupon

Lot after lot you can rely on TAM with utmost confidence for consistently uniform opacifiers. In any desired quantity, too. *TAM Division National Lead Co.*

37/Circle on Reader's Service Coupon

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Permit No. 183
Chicago, Ill.

BUSINESS REPLY MAIL
No Postage Stamp Necessary If Mailed in the United States

POSTAGE WILL BE PAID BY

BRICK & CLAY RECORD

5 South Wabash Avenue

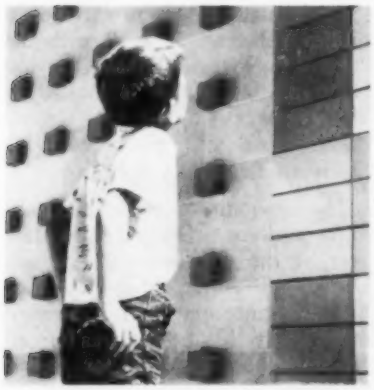
Chicago 3, Illinois

The Camera
Views the News

Convinced that "good public relations" can be the solid foundation for brick industry prosperity, the Arizona Masonry Guild made a community-wide civic affair out of its recent brick masonry apprenticeship competition. The event, in which 55 apprentices of central Arizona participated, was sponsored by the Phoenix Bricklaying and Stonemasonry Joint Apprenticeship Committee and involved the laying of masonry products in an 800 foot wall to enclose a children's playground area at Mesa's Pioneer Park.

First place winner of the competition was Lawrence P. Meskimen Jr., a third year apprentice.

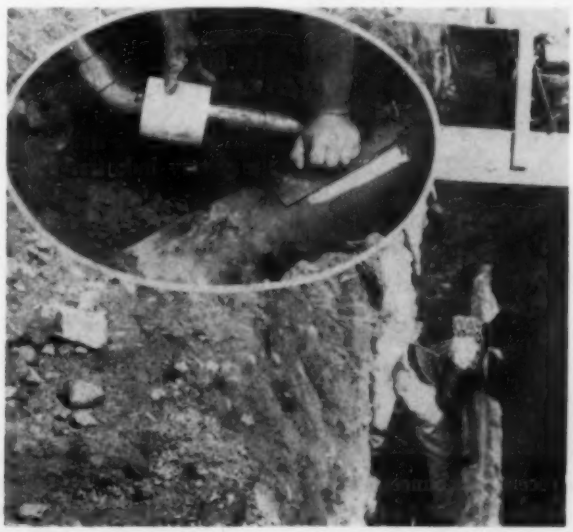
All 2nd year apprecentices, these three boys will attend the Washington, D. C. competition. L to r, Johnnie Saye, Rudy Osorio and Alvin Roberts.



To show homeowners how to achieve unusual pattern, textural and color effects with brick, block and tile, the Detroit, Mich., Mason Contractors Association built these walls recently at the Michigan State Fairgrounds. Four masons, working a week, used 20 kinds of brick and some 15 varieties of block to erect the attention-getter. Also in the unique wall are glazed brick, glazed tile and glass block. There are 19 color shades. The pourous brick and block were waterproofed in six colors with a new five-year surface paint donated by Henry W. Cairns, president of Rox Products Co.

This impressive massive sign greets passerbys near Sanford, N. C. Erected recently, it is the joint project of Sanford Brick Industries and the Finer Carolina program. It is located just north of the intersection of the U. S. 1 bypass and the Wicker Street extension.

Proudly displayed recently at the University of Nevada was the 250,000,000 brick produced by Reno Press Brick company. Officials of the company stated that the quarter-of-a-billionth brick was used in the construction of the new Dr. J. E. Church Fine Arts building on the University campus.



Laying of first 8-inch plastic sewer main in the United States in Needham, Mass., presented no special problems, even though considerable ground water was present. A generous amount of washed stone, ranging in sizes from ½ to ¾ inches, was used as a bed. The 15-foot lengths of plastic pipe were handled easily and laid with a 2.5% slope. House service connections (inset) were made by saddle-type plastic wyes with 4-inch branches, joining 8-inch main. All plastic pipe on the Needham project was furnished by Evanite Plastic Co., Carrollton, Ohio, a Division of the Evans Pipe Co., Uhrichsville, Ohio.

A Look at The Latest in Industry News

Alfred U Site of Research Project

A research project aimed at cutting costs of steel production has been authorized at the State University of New York College of Ceramics, Alfred University.

The Clay Hot Top Research Institute has approved a $2,700 grant to the College of Ceramics for this research. The Institute is an organization of manufacturers of "hot tops." These are funnel-like ceramic devices placed on top of each ingot mold through which molten steel is poured.

Dr. Wayne E. Brownell, Professor of Research, will direct the project. He said that the "hot top" makers want an improved ceramic material that will enable steel makers to reduce the amount of molten metal that has to be poured to fill ingot molds.

Laws Appointed Sales Manager for L. W. Corp.

Charles B. Laws has been appointed southern regional sales manager for the Southern Lightweight Aggregate Corporation, Richmond, Va., accord-

ing to a recent announcement by A. Cabell Ford, director of sales for the company.

Law's territory will include North Carolina, South Carolina, Georgia and Florida. He was formerly district sales manager for Carolina Solite Corporation, a wholly owned subsidiary. He maintained offices in Charlotte, N. C.

New Brick Corp. Formed

In a joint announcement made by Arthur, Louis W., Walter and John Kasten, owners of Kasten Brothers Brick Company, Inc., Columbia, Mo., the sale of the 64-year old company to a new corporation was made known recently.

The purchasing organization is Kasten Industries, Inc., whose charter was granted on Oct. 16, 1959. The new management commenced operating the business effective Nov. 1, 1959.

Louis W. Kasten is in charge of operations as General Manager. Harold C. Kasten is head of the Sales Department and Kenneth G. Kasten Plant Superintendent. Edwin M. Perdue is in charge of trucking operations.

Elmer Spain Joins Chambers Bros.

Lin Bettison, President of Chambers Bros. Co., Philadelphia, old line manufacturers of structural and refractory production machinery has announced that the midwest area will be served by a sales engineer located in St. Louis.

Elmer Spain, former technical editor of BRICK & CLAY RECORD joined Chambers Brothers February 1. He is in charge of customer service throughout the area. Spain, a mechanical engineer, has ten years experience in the structural and refractory clay industry. Prior to serving as BRICK & CLAY technical editor, Spain, was with Sapulpa, Okla. Brick & Tile Co.

To Manufacture Super Refrax Products

Refractory & Metallurgical Products Co., Detroit, Michigan has been formed to manufacture super-refractory products for applications in the steel, foundry and metal-working industries.

Raymond W. Morgan is President and Treasurer, and Warren L. Pell is V.P. and Secretary. Morgan is a ceramic engineer who has been active in the refractory industry for 33 years, while Pell has spent 26 years in sales and administrative posts with several manufacturers of super-refractories.

Jenny Joins Shale Institute

Daniel P. Jenny, for ten years a structural engineer with the Portland Cement Association, has been added to the staff of the Expanded Shale Clay and Slate Institute, according to an announcement by Allan P. Taylor, President of the Institute.

His more recent work with the Washington office of the Portland Cement Association has included short course lectures and discussions on the subjects of thin-shell, ultimate strength, as well as prestressed concrete design.

Jenny assumed his new responsibilities Februray 1, 1960 with the office of the Expanded Shale Clay and Slate Institute, which is located in Washington, D. C.

Dorn to Gladding McBean

The appointment of Robert Dorn to the position of General Sales Manager of the Architectural Products Division, Gladding, McBean & Co., has been announced by H. K. Swenerton, Vice President. Dorn was formerly Southwest Manager for Sunset Magazine.

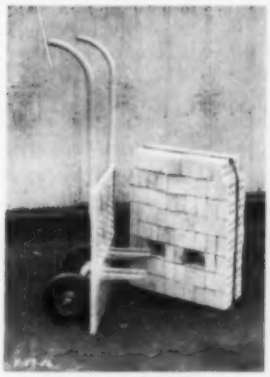
Dorn will be responsible for the management and direction of market-

ing and sales programs for all architectural products distributed by Gladding, McBean & Co. These include Hermosa Tile, unglazed ceramic tile, quarry tile, ceramic veneer, face brick, roof tile and solar screen.

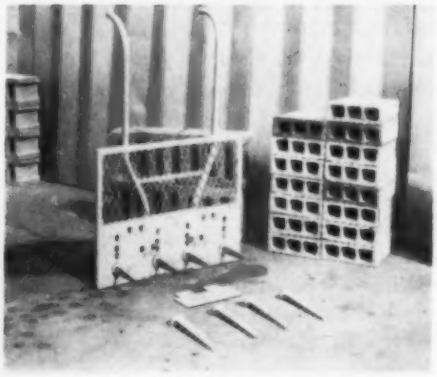
Let FLINK solve brick and tile handling

- **Loading at the plant**

The Flink hand truck can be quickly adjusted to handle packages of all shapes and sizes. One man can load a truck in less than two hours.



For Brick

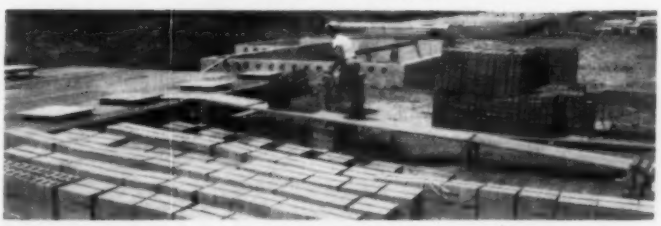


For Tile

- **Unloading On Job Site**

Clay products can be unloaded at the job site into stock piles or placed around the building handy for the workman. This delivery service with the Flink hand truck and ramp cuts unloading costs by 80%.

Unloading to stock piles



Delivery on the job

- **Delivery to bricklayer**

Brick are trucked to the brick layer by hand truck or by portable elevator forks to scaffolding. As much as $3.00 per 1000 brick are saved by this package delivery.

Fork truck delivery

Portable Elevator to scaffold

You can loan or rent this equipment to contractors and make a hit with your customers. You will be doing your customers a better service. You will make it possible for your contractor customer to save up to $20 per thousand in wall costs.

SELF-FEEDING

FLINK COMPANY

SPREADERS **MULTI-PACK EQUIPMENT**

PHONE 2-2169

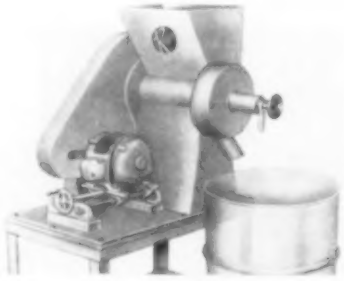
STREATOR, ILLINOIS

New Products

Heavy Duty Crusher

An improved heavy duty dry Crusher or Pulverizer. This machine, the #70-H size 4 Crusher, incorporates a revolving crushing roll inside the hopper to give material a preliminary breaking down before feeding between special hardened steel grinding plates. Clearance of plates and fineness of grind are simply adjusted by handwheel, and when desired fineness is obtained, setting can be locked and material kept feeding through. The crushers feature variable speed drive as standard equipment to deliver best results with maximum production. Indicating gauge insures precise control of fineness of grind. The #70-H size 4 Crusher can be readily dismantled and cleaned within two or three minutes.

Chas. Ross & Sons.



56/Circle on Reader's Service Coupon

Motor Scraper

All-hydraulic TS-360 motor scraper with a 30 cu. yd. heaped capacity and a 22.3 cu. yd. struck capacity. This 63,150-lb. unit is powered by the Allis-Chalmers turbocharged 21000 engine, developing 340 hp at 2,000 rpm.

Allis-Chalmers

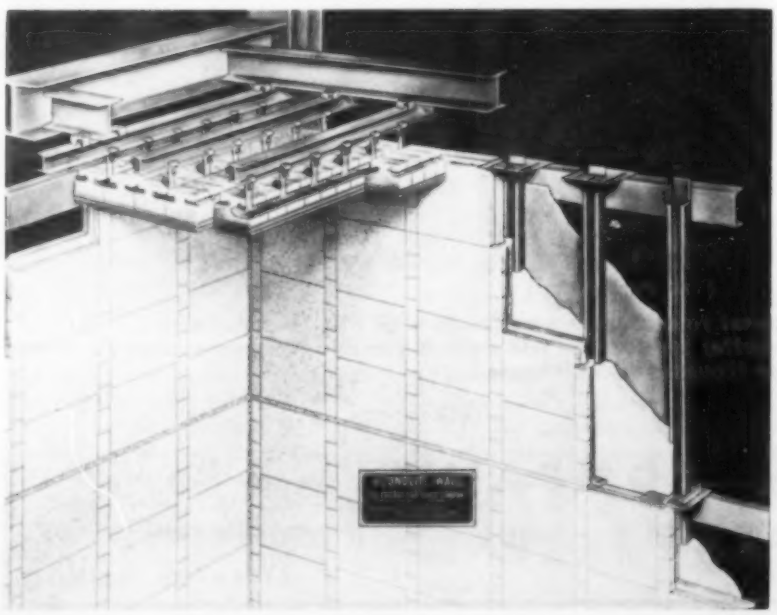
57/Circle on Reader's Service Coupon

Container

Called the DINOSAUR, this machine could be the answer to many material handling problems which confront the clay industry. These rugged containers with their giant payloads can transport the raw materials to the plants, can be set off gently on the ground, set up on telescopic legs at dock level or dumped at the plant. The finished product can also be hauled to rail sidings and the entire container may be loaded onto standard flatcars to be picked up at destination by another unit. These containers come in various lengths and designs as indicated in the attached literature.

Dempster Bros.

58/Circle on Reader's Service Coupon



Portable Blower

Lightweight portable power and blower units are revealed by United States Motors Corporation for a wide variety of on-the-spot electric power applications, ventilation needs, and exhausting purposes. *United States Motor Corp.*

59/Circle on Reader's Service Coupon

Proportioning Pump

A positive displacement pump for feeding concentrated corrosive chemicals in the chemical and air conditioning fields and general industry.

The diaphragm-type pump, Model 1331 Chem-O-Feeder, is made of corrosion-resistant materials and will efficiently feed such chemicals as 66 degree Baume Sulfuric Acid, Sodium Hydroxide, Caustic Soda, Phosphoric Acid, Plating and Photographic Solutions, etc. The pump is easily installed, either floor-, shelf- or wall-mounted, and takes suction directly from the chemical shipping container.

B-I-F Industries

60/Circle on Reader's Service Coupon

Econolite Wall

The ECONOLITE wall, is designed for service up to 1900° with plenty of safety for upsurges in temperature. Wall is normally 6" thick, composed basically of 3" of first quality fired tile and 3" of a 20 pound per cubic foot castable insulating block mix.

The wall does not need a casing for support or protection. A unique design of casing in conjunction with the wall, of light gauge, for about one-quarter the cost of normal casing. The combination of tile and castable insulating block mix makes an efficient furnace enclosure. The modular sizes reduce engineering costs to a minimum. Installation is more rapid than with any other type of construction for similar service. The square foot of wall installed per mason man hour is exceptionally high. Recommended use would be for tunnel kilns and shuttle kilns. The ECONOLITE wall can be used in conjunction with suspended flat arches for most efficient use of furnace volume.

Chicago Fire Brick Co.

61/Circle on Reader's Service Coupon

New Products

Cut-off System

Accurate cut-off control of scale loading is provided by a Magnetic Reed Cut-Off System. Designed for use with Howe Tape-Drive Scales, its simplicity and dependability minimize the maintenance normally required for more complicated electronic or mechanical systems commonly used in batching and loading installations.

Available for single or multiple ingredient control, the new Howe system consists of a magnet, red switch and relay. The magnet is attached to the top of the scale indicator. A reed switch is fastened to the end of a movable arm, mounted on the inside of the dial glass. By means of a knob, the switch can be positioned slightly inside of any point along the one described by the indicator magnet. To complete the circuit, the two ends of the switch are wire-connected to the relay.

Howe Scale Co.

62/Circle on Reader's Service Coupon

PETRO-AA, an alkyl naphthalene sulfonate, will reportedly reduce the surface tension of the moisture content in the clay to give maximum moisture distribution without "wetting". The uniform distribution of the moisture will result in the following benefits.

1. A more uniform drying of the ware with drying time reduced 15 to 20%. 2. A significant reduction in drying cracks due to less strain in the extruded body and more uniform drying. 3. A more uniformly fired ware with modulus of rupture increased 20 to 30%. 4. A virtual elimination of checks in the finished brick, tile or pipe. 5. While the final absorption remains unchanged, a significantly lower rate of absorption is achieved which reduces the "breathing" of brick and significantly lowers the incidence of efflorescence.

The PETRO-AA is dissolved in water to make a 25% solution and is added to the pug water at a rate equivalent to .025% (100% basis) of the water added. Thus if a clay is taking 20% water, 0.1 lb. PETRO-AA powder or 0.2 lbs. PETRO-AA liquid would be added per 50 gallons water or per ton of extruded clay.

Petrochemicals Co.

63/Circle on Reader's Service Coupon

Cone Plaque

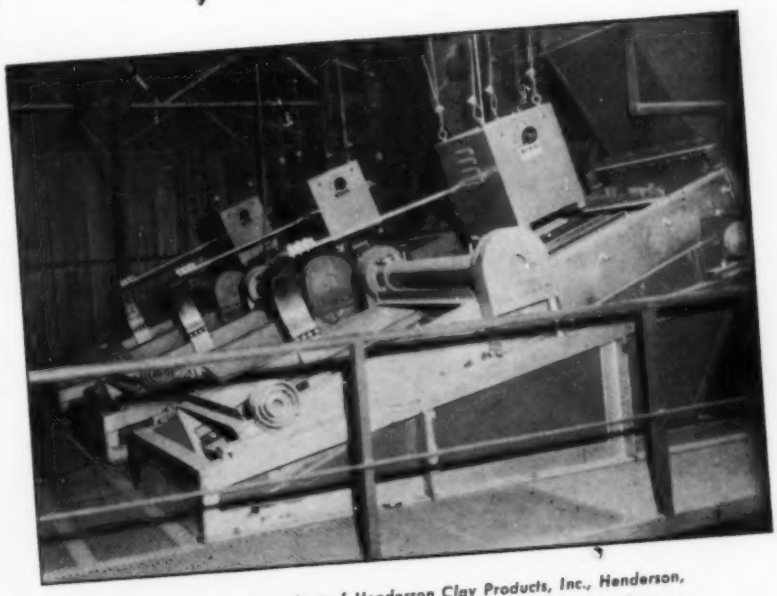
Manufacturing a new, improved cone plaque with some distinct advantages. The big change is that between the second and third holes a greater amount of space is left and a groove has been put in both top and bottom of the plaque. The advantage of this is that it can be broken in the middle to make two two-hole plaques. Thus the customer need order a box of 100 cone plaques and then be able to use them as two of four-hole plaques as desired. This eliminates the carrying of two types of stock by the customer.

Along with this change, the plaques will be made in two types for temperature purposes. One cone will be for use through Cone 24. The second type will be for use from Cone 25 through Cone 35 or high temperature ranges. Thus the trade will have a choice of cone plaques to serve two different ranges of temperature.

Bell Research, Inc.

64/Circle on Reader's Service Coupon

Why Overstrom?



The ultra-modern plant of Henderson Clay Products, Inc., Henderson, Texas, is equipped throughout with Overstrom Vibrating Screens. Pictured is one of two banks of three 4' x 10' step-deck machines, with electric screen heaters, in the raw clay grinding circuit.

Why Overstrom? **Because the management of this successful and fast-growing firm knows it doesn't pay to settle for less than the *best* in plant equipment. They know that *Overstrom* efficiency cuts grinding costs by reducing circulating loads — *Overstrom* quality cuts downtime and maintenance costs.**

There is no better vibrating screen. That's *"Why Overstrom"!*

OVERSTROM VIBRATING SCREENS

OVERSTROM & SONS, INC • 2213 West Mission Rd • Alhambra, California

Minute Money Makers

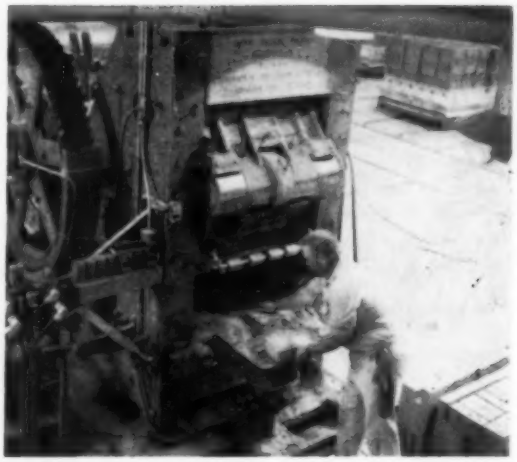
A practical and quick description of some ideas that may save you much needed time in your operation.

Set The Brick Down

It is a known fact that the most comfortable position for a worker handling heavy objects is to move them at table level. Also, it is known that the object should not be lifted but dropped in the work motion.

It is for this reason that North American Refractories Co., in their Faber, Mo., plant elevated their Chisholm Boyd and White presses to tunnel kiln car top levels.

As the 6 x 10′ cars are loaded, the cars are lowered by a hydraulic lowervator so that the top of the unfinished settling is at contant level, allowing setting with minimum of exertion and effort. This method has been found to allow use of fewer offbears in the pressing department.



Use Plows on Belt

The transfer of clay from a common carrier to a battery of screens is problematic in the proper distribution of clay to each screen.

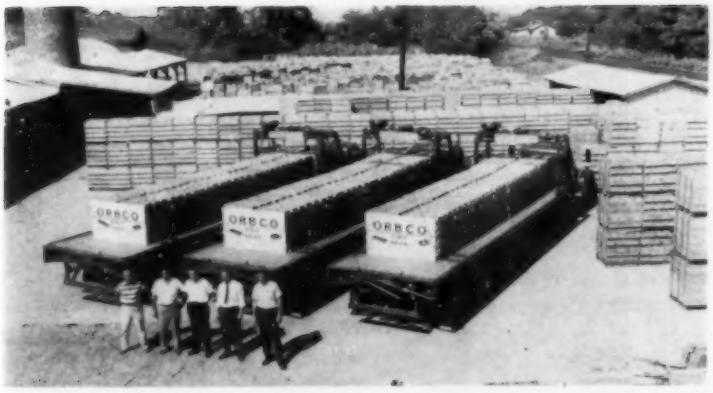
Nash Brick Co., Rocky Mount, N. C. solved the problem by using plows on the belt to divert the clay. Each plow is set to take a third of the clay from a single conveyor belt and deliver it to a battery of four Leahy screens.

By adding heat to the vibrating screens, efficiency of the operation is greatly increased. A seven mesh screen is used here.

Join the leaders in efficient Brick Packaging and Handling

with SUPERLITE Unloaders

Robinson Brick & Tile Co., Denver, Colo., have a fleet of nine Superlite Unloaders which handle their very high-grade glazed tile. No clay product is too delicate for the Superlite Unloader.



Owensboro Brick & Tile Co., Owensboro, Ky., must handle several million brick weekly and depend on their fleet of ten Superlite Unloaders to do the job efficiently, quickly and with no loss through handling.

"The Proof is in the trying!"

- *Cut Operating Costs*
- *Reduces Your Truck Fleet*
- *Fast - Effortless - Economical*
- *Speedy Deliveries*

Over 500 Superlite Unloaders are now in use in the heavy clay products industry.

Find out today how you can get more efficient brick handling by writing, wiring, or phoning us collect.

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Clay Products Packaging Takes Second Breath

The idea of unitizing brick and clay pipe into packages took hold of the industry's shipping problem in the early 50's. From the start, packages of brick ranged from 500 on down to 100. Some were on pallets and most were palletless. In the early stages the strapping suppliers were the leaders in ideas both for packages as well as systems. Progress was good.

The Structural Clay Product Research Foundation showed the way to automatic packaging and developed the 62 pack. The Foundation has now completed its work on the project and through it has left a good many fine ideas on which individual manufacturers can build.

This has reinvigorated the industry to the packaging idea so that right now the industry is in a new wave of converting to strapped package delivery. Because of this new lease on packaging life, BRICK & CLAY RECORD is again launching a series of informative discussions on the subject, beginning here.

This time packaging is here to stay. As one operator said, "If you want to stay in the brick business, you've got to deliver packaged materials". The idea applies to refractories and clay pipe as well.

The packaging requirements of the brick and clay products industry are as varied as the companies in it. Each brick and clay products manufacturer devises a package and system to meet his specific requirements. This trend will not change.

After ten years of custom-engineering approach to brick and clay products handling, the following premises were arrived at:

1. Each installation is an individual engineering problem.
2. Elaborate equipment is unjustified and unnecessary in the majority of cases. The emphasis is on *method* rather than equipment.
3. Modern, centralized strapping stations are necessary for the full utilization of the handling economies made possible by engineered packaging.

In view of the progress that has already been made in converting the brick and clay products industry from centuries-old materials handling methods to modern packaging, it is well to remember that it is largely from work done only in the past decade.

Certainly, the packaging campaign of BRICK AND CLAY RECORD in the early '50's played a large part. It helped make the leading manufacturers in the field aware of the advantages of packaging—the reduced handling costs and breakage, the simplified inventory requirements, the increased sales appeal, the speeded up loading and unloading.

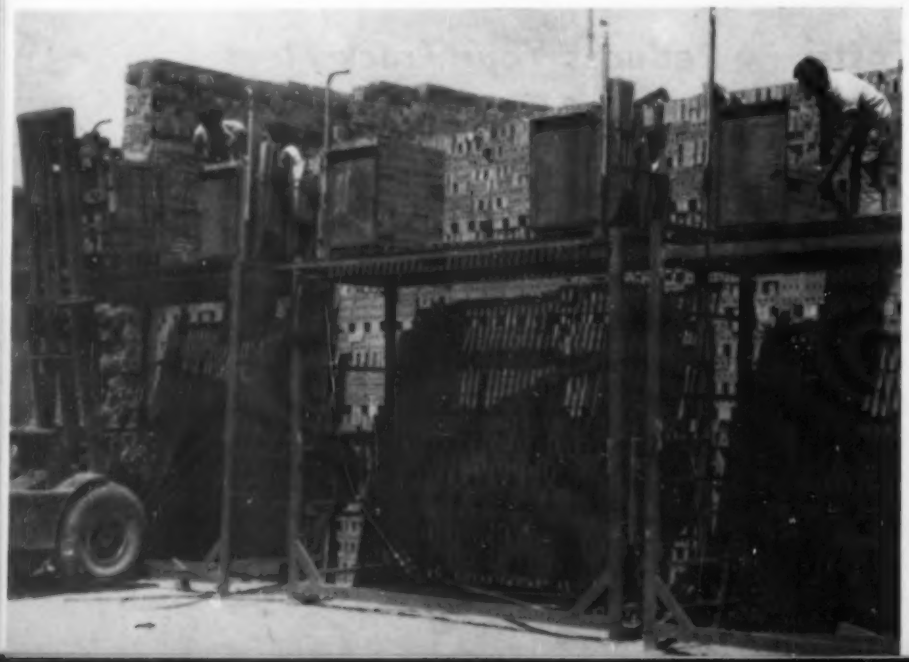
Specially trained field engineers were sent out to brick and clay product plants coast-to-coast to design packaging systems to fit the specific needs of individual producers. Their reports were carefully screened and analyzed at Signode's engineering center and other research centers, and the conclusions checked out in the packaging research laboratories.

The work is not all done. It is still going on in those same laboratories. From that testing will come innovations in brick and clay products packaging, better methods to apply in individual situations.

For instance Signode's custom-engineering approach to packaging problems can best be illustrated in the following case histories:

General Shale Products Company

In March, 1958, a packaging engineering study was conducted at one of General Shale's seven brick producing plants. The problem: adapting steel strapping tools and dispensers to packaging jigs already constructed along kiln car return tracks. Detailed tests and studies at the plant showed



Three position scaffolds in top position at the start of a kiln. An electric strapping machine is used to apply the strapping.

PACKAGING ROUNDUP

that a redesigned package and a centralized packaging system would result in reduced labor costs, smoother, more efficient operation, and improved housekeeping. Investment in requisite equipment would be nominal and fully justified in view of the returns.

As the engineering study neared completion, General Shale officials became interested in the proposed plans not only for the original plant but for most of the others as well. Engineers submitted plans for a conveyorized, centralized packaging station that was accepted and is now operating in the main General Shale plants. Making use of electric and air-powered strapping machines and a special grade of strapping developed for the brick industry, the General Shale installations reflect the current trend toward custom-engineered centralized packaging stations that minimize materials handling problems.

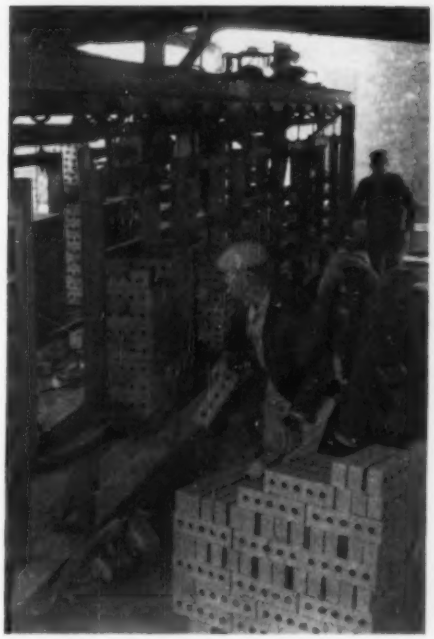
Burns Brick Company

Another recent steel strapping brick packaging installation is located at Burns Brick Company, Macon, Georgia. Mr. Burns designed a system for his company in which brick—are stacked on roller conveyors directly from kiln cars. Particularly significant in regard to the Burns brick installation is the fact that its centralized packaging system incorporates the newly designed Power Strap Feeder which greatly speeds up packaging time.

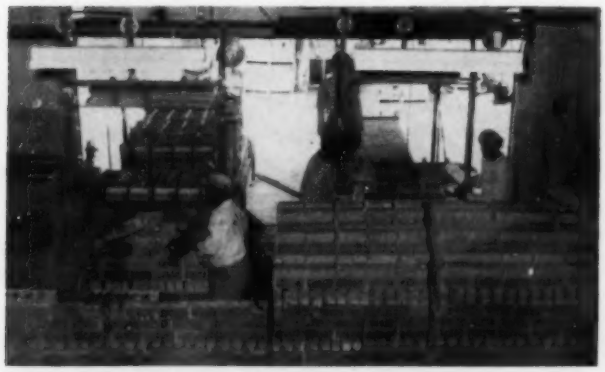
Refractories Get Attention

In late 1956 and early 1957 engineering studies were conducted at the

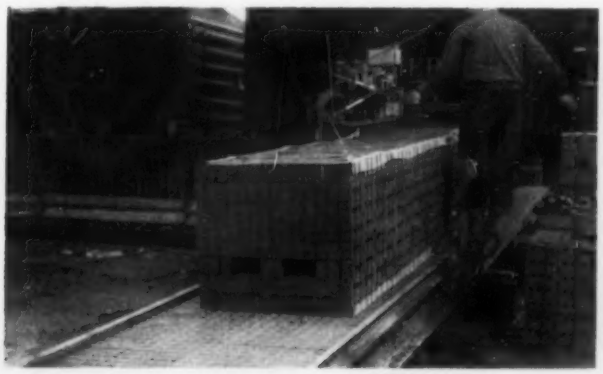
Continued on page 63



Semi-automatic packaging machine at Owensboro. Moving jigs are manually loading on either side of machine.

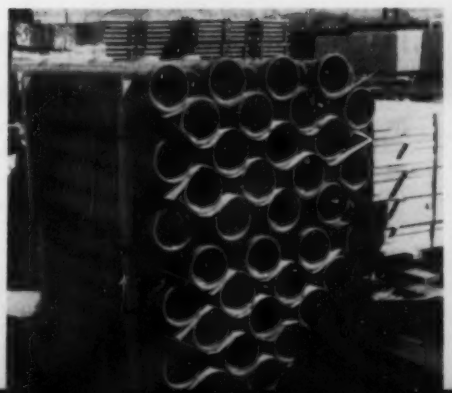


A typical General Shale installation. Five men package more than 70,000 brick per shift.



Burns installation is unique in that two 3/8 x .020 steel straps are applied to each 100 pack.

Strapping on conveyor at General Refractories Co.



Packages of 4" sewer pipe. Note safety strap.

Lift Trucks Cut Production Costs

Lift trucks have played a key part in developing mechanical handling in the clay products plant. In all cases studied, substantial savings have been made in money, time and losses. To the lift truck can be credited the major share for the success of the package handling system. Here is a typical study of a successful installation of lift truck operations.

When the Conco-Meier Co. at Lowell, Ill. mechanized its 19 million brick a year handling operation, six Yale propane-powered lift trucks were chosen for the job. The result of this mechanization was a substantial slashing of production costs and a revitalization of the company's "Bee-hive" kiln set-up.

Vice President and General Manager for Conco-Meier, P. E. "Pete" Cresto, explained the reason for eliminating the former hand and wheelbarrow handling method. "We simply had to streamline our operation. Competition in this industry made it mandatory for us to seek out more efficient production methods.

Prior to the installation of the equipment here, our maximum load was 100 brick per wheelbarrow. Now each truck lifts and moves 348 brick per load, and in less time than was required by the man with the wheelbarrow.

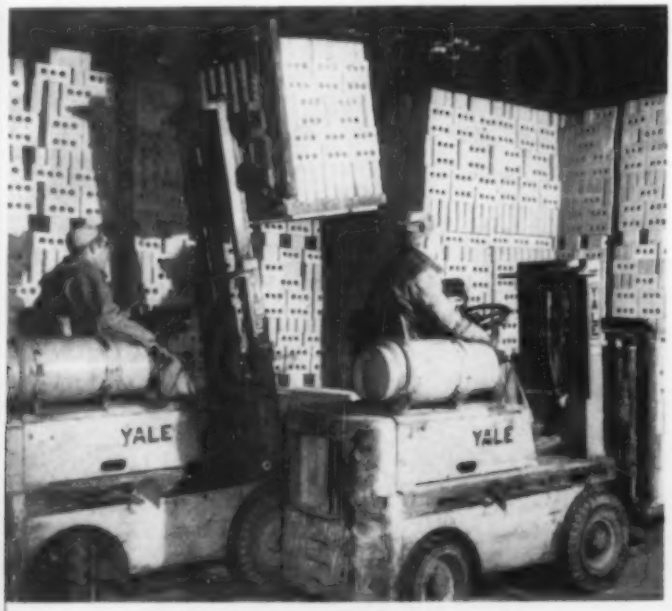
The trucks are equipped with a Bickerstaff fork attachment. The grippers on each side of the fork tines are actuated by the weight of the brick load and close with precisely enough pressure to grip the rail brick at the load's bottom.

By means of this attachment, brick can be carried safely without need of a pallet.

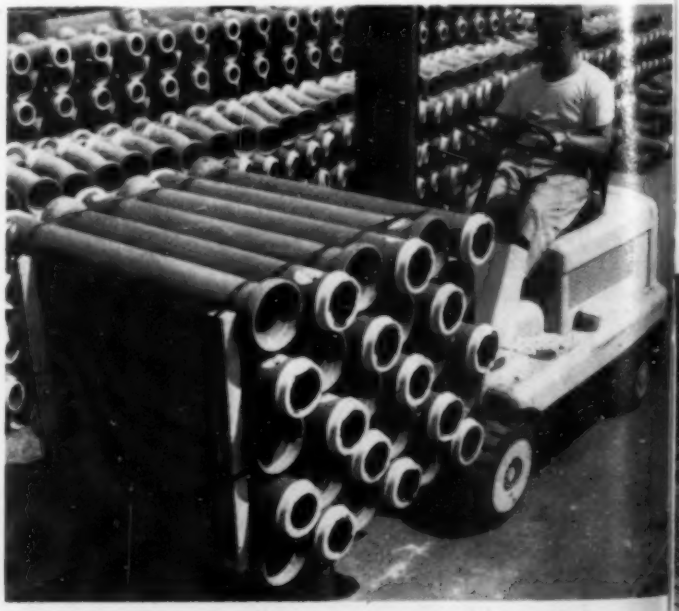
Kilns Are Unit Loaded

The trucks raise the unit loads of dried brick and carry them, one load at a time, into the bee-hive kilns. Two more trucks are used solely to remove the brick after they have been burned.

"We have moved as many as 120,000 brick a day on the loading dock with two Yale trucks," said Cresto.



Yale trucks maneuver well in cramped interior of kilns. Unit loads of brick are removed from dryer "tunnels" and stacked in three tiers in kilns.



Handling costs were cut and damage reduced when Gladding, McBean and Co., Glendale, California, instituted unit load packaging and lift truck handling of clay pipe. Expendable wooden stringers at sides and bottom, held tight by steel strapping, provide support and protection, and allow for insertion of forks. Lift truck is a Hyster Spac-Saver 40.

PACKAGING ROUNDUP

This 4000-lb. capacity J. I. Case fork lift allows the operator to ease into position to pick up or place loads in one, smooth, continuous motion.

The Flink hand truck is also used on the job.

Strapped Unit Loads Reduce Handling Costs, Pipe Damage

Special unit loads designed for lift truck handling have brought about substantial reductions in handling costs and damage to vitrified clay pipe produced by Gladding, McBean and Company in Glendale, California.

This method of packaging is used for pipe sizes up to eight-inch. Stacked end for end, the pipe is supported at bottom and sides by expandable wooden stringers, made from dunnage, held tight by steel strapping. The bottom stringers provide clearance for forks, and the side stringers protect and support the pipe.

Loads are made up in a steel frame which supports the stringers until they are banded. Spacers are laid between each row of pipe. In addition to the bands around the load. strapping at a point about halfway between top and bottom holds the upright stringers tight against the pipe. This is placed as the load is built, and serves also to hold the framework in place when outside bands are broken for removal of the top layers of pipe.

The use of lift trucks to move pipe in unit loads has effectively reduced handling costs through each step, from the plant to the ultimate user. In-transit breakage has been greatly reduced, and distributors report reduced breakage in their yards.

The Flink hand truck is a real utility transporter for the 100 pack. Trucks are loaded with it and unloaded at jobsite with the cart and a flush ramp.

Fast Delivery Is Important Link

PACKAGING ROUNDUP

Because of the unusual attention given to truck delivery of clay products, delivery can be made to construction jobs in good or bad terrain. The trucking industry has devised many ideas and the alert clay products manufacturers are using them. Here are several widely used by the industry.

Delivery trucks for the clay industry are specifically designed to reduce labor costs, speed up delivery, increase efficiency, in some cases where packaging is combined with delivery to simplify inventory, reduce truck fleets and reduce damage. Some are designed to operate without strapped packages and some can handle both strapped and unstrapped packages.

Loading and unloading is usually done in minutes. With some of the designs as the Pack-Hauler, tandum units enable a single operator to load, haul and unload several loads.

It has been satisfactorily demonstrated time and again that these trucks will deliver at least twice, and in some cases three times, as many brick as a conventional truck . . . . in the same amount of time. This means more deliveries on a reduction in the manufacturers fleet size (capital investment).

With the elimination of manual handling, damage claims from contractors and dealers are practically eliminated.

Split-load deliveries which are possible, reduce delivery time for small quantities of brick to different jobs or to various locations at the same job.

In general these delivery trucks handle about 125,000 brick per day.

Superlite Unloader equipment handling packaged glaze tile at Robinson Brick & Tile Co., Denver, Colo. 500 or 1000 packs of brick can be delivered as well.

The Pack-Hauler delivers 125,000 or more brick per day, it is designed to load, haul and unload brick in the matter of minutes.

Side-O-Matic trucks and Bickerstaff fork team up for a fast, efficient delivery system.

The Pack-Grab which can be attached easily to any mechanical loading unit or fork lift truck, can pick up from five to 500 brick.

Tack-L-Hoist taking on a load of clay pipe for unit delivery.

SAVINGS up to 20% on CONVEYOR COSTS
12 to 60% GREATER HAULING CAPACITY

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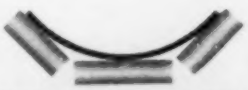
Ask your R/M representative to show you how Ray-Man Conveyor Belt with 45° idlers can give you the most for your conveyor dollar . . . write for new Bulletin M303, "Ray-Man for 45° Idlers."

RAY-MAN BELT IS BUILT TO TAKE THE EXTRA STRESS OF 45° IDLERS

BIGGER LOADS, LESS SPILLAGE, LESS WEAR ON COVER WITH 45° IDLERS

20° IDLERS REQUIRE WIDER CONVEYOR TO HAUL SAME TONNAGE



ORDINARY PLY BELTS ARE TOO BOARDY TO TAKE 45° IDLERS

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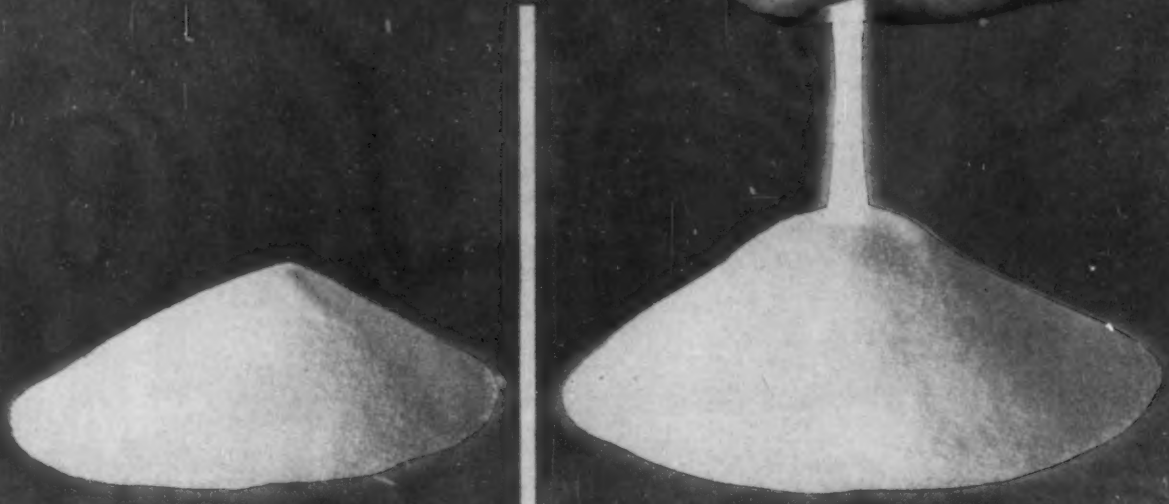

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Using a lesser amount of Superpax A, you can obtain opacity equal to that of other brands. This means that your actual cost for Superpax A can be considerably lower than that for ordinary opacifiers.

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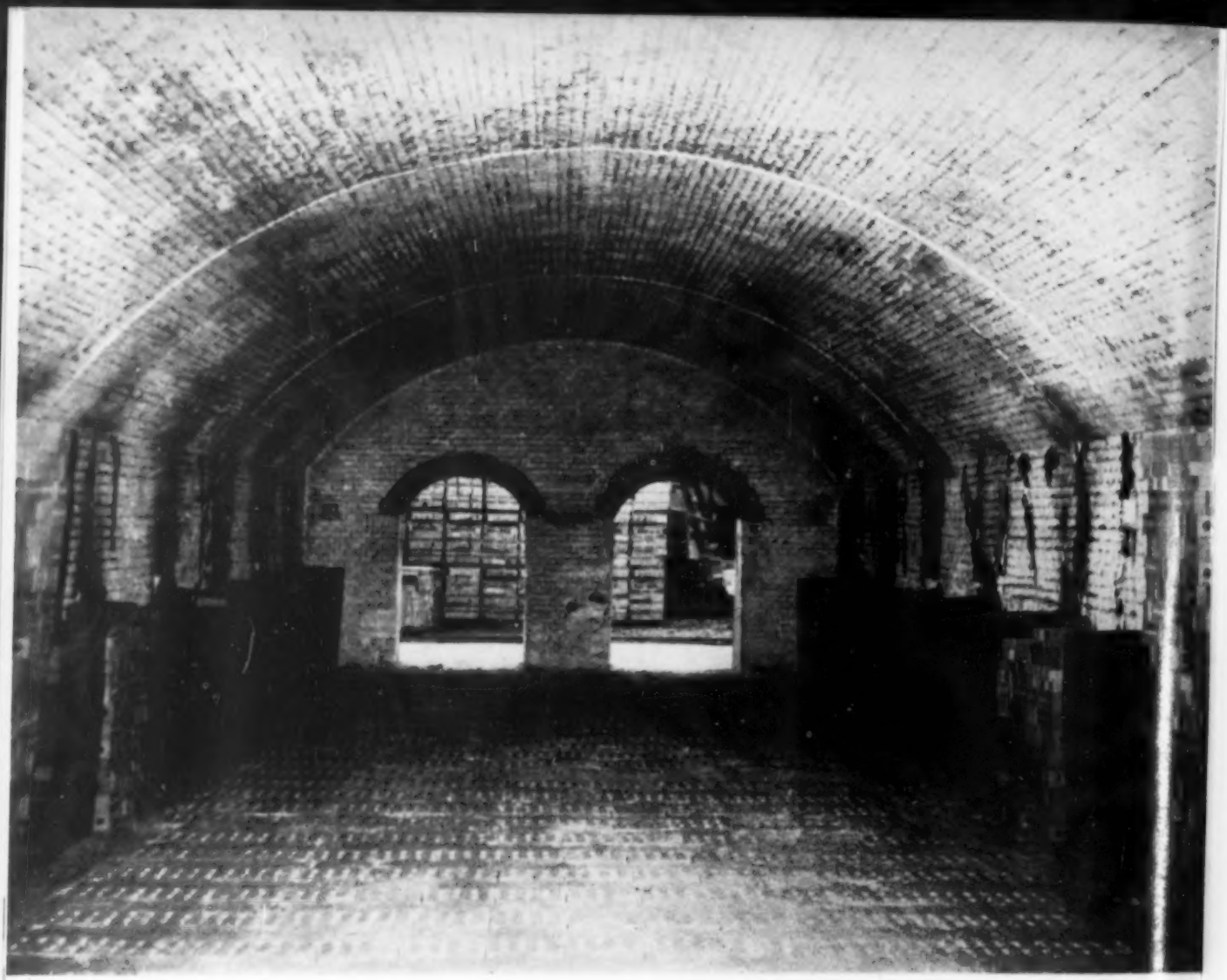

ALLIANCE CLAY PRODUCT CO. reports:

Fuel costs reduced up to 23% in kilns lined with B&W Insulating Firebrick

A metered fuel consumption study of six kilns lined with lightweight B&W K-20 Insulating Firebrick was conducted by the Alliance, Ohio, plant of The Alliance Clay Product Company.

Here are the results:

- ***Fuel costs were reduced by up to 23% in circular kilns and up to 18% in rectangular kilns.***
- ***Cycle time was shortened in both types of kilns.***
- ***Salable ware was appreciably increased.***

As a result of this profitable performance, Alliance lined 23 rectangular kiln crowns and 2 circular kilns with B&W IFB.

Here's why *lightweight* B&W Insulating Firebrick slash fuel costs. They store and conduct less heat. Low heat storage permits quicker heating and cooling of the kiln, with less usable heat lost to the atmosphere. They also help step up production and cut cycle time, because they come up to operating temperature faster. Thus, the low heat storage and thermal conductivity of B&W IFB reduce fuel input—and cut your fuel costs.

Bulletin R-43 gives helpful data on the use of B&W Insulating Firebrick in periodic kilns.

Send for your copy today.

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R419

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Steel strapping cuts brick handling cost and time

Acme Idea Man Bill Allen helps solve the packaging problems of many companies.

DENVER BRICK AND PIPE COMPANY, DENVER, COLORADO, uses Acme Steel Strapping to secure bricks into packages of five 100-brick units. This system has reduced material handling time and cost, through allowing full use of mechanical handling equipment (Idea No. S3-60)

Customers prefer packaged brick. In many cases, packaging has cut brick handling time up to 35% and slashed labor costs in half. Time and manpower saved permits tighter work scheduling and faster completion of construction projects.

***Work with your Acme Idea Man.** He has ideas that can help you gain more efficient packaging. Write Dept. BES-20, Acme Steel Products Division, Acme Steel Company, Chicago 27, Illinois. In Canada, Acme Steel Company of Canada, Limited, 743 Warden Avenue, Toronto 13, Ontario.

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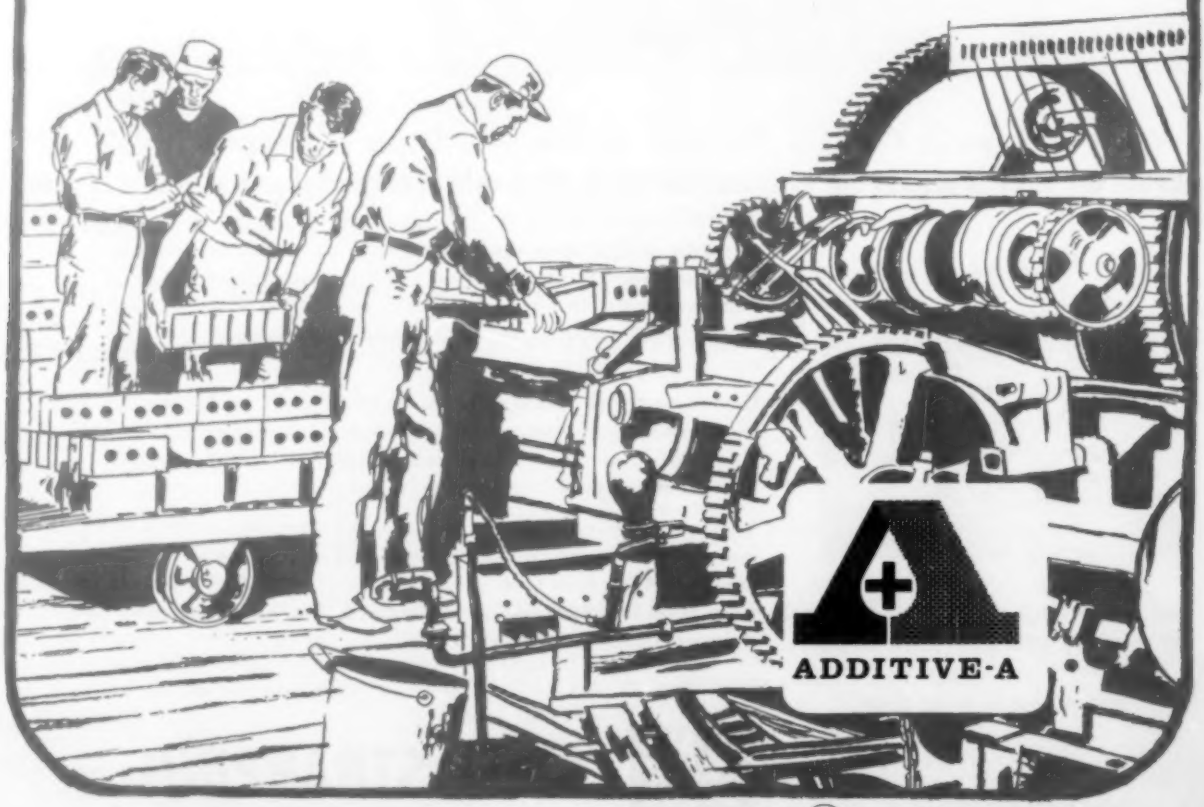
For descriptive folder on Additive-A, write to: Chemical Products, Kimberly-Clark Corporation, Neenah, Wisconsin.



Kimberly-Clark Corporation Contributing Associate S C P I

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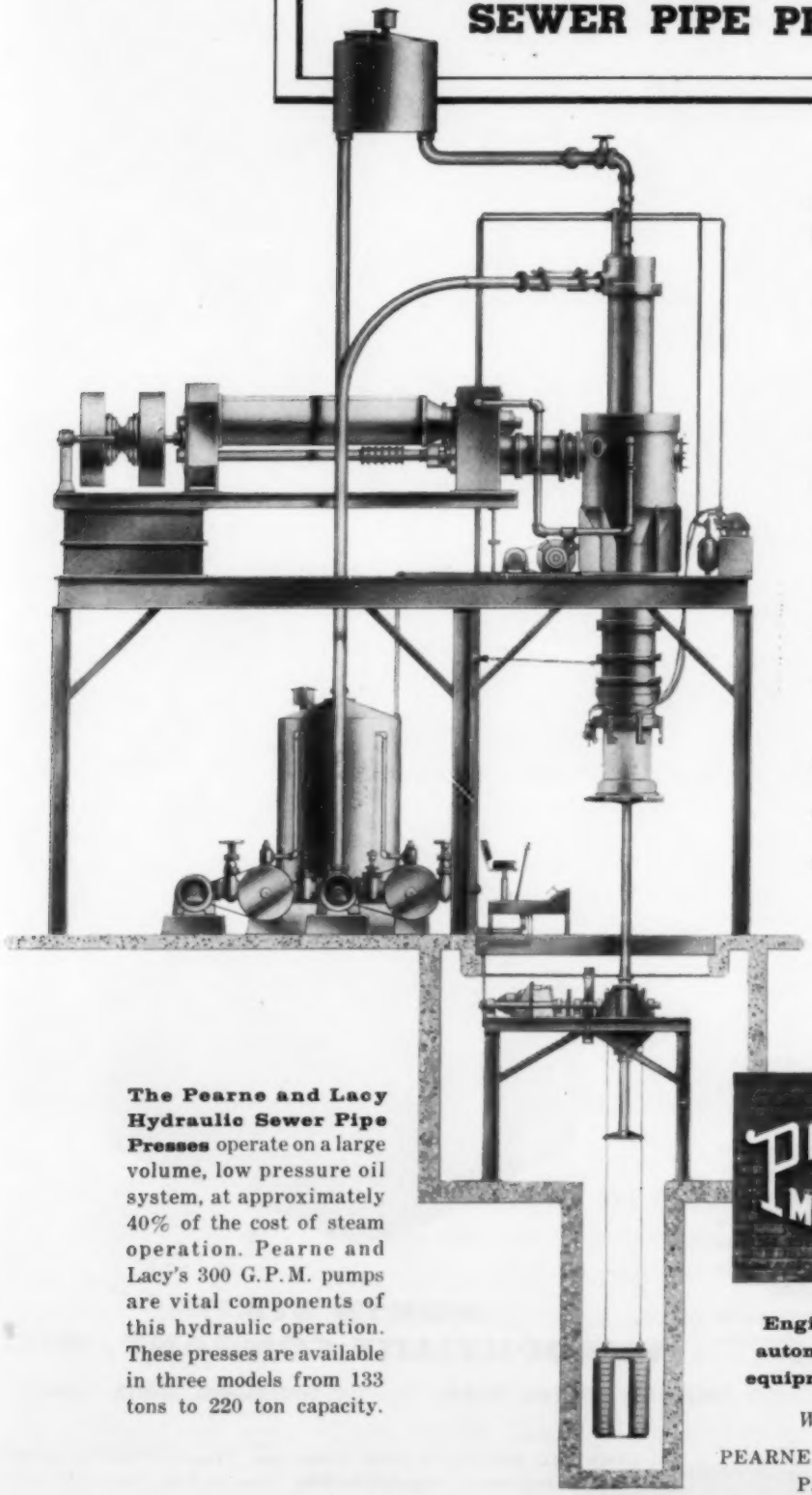

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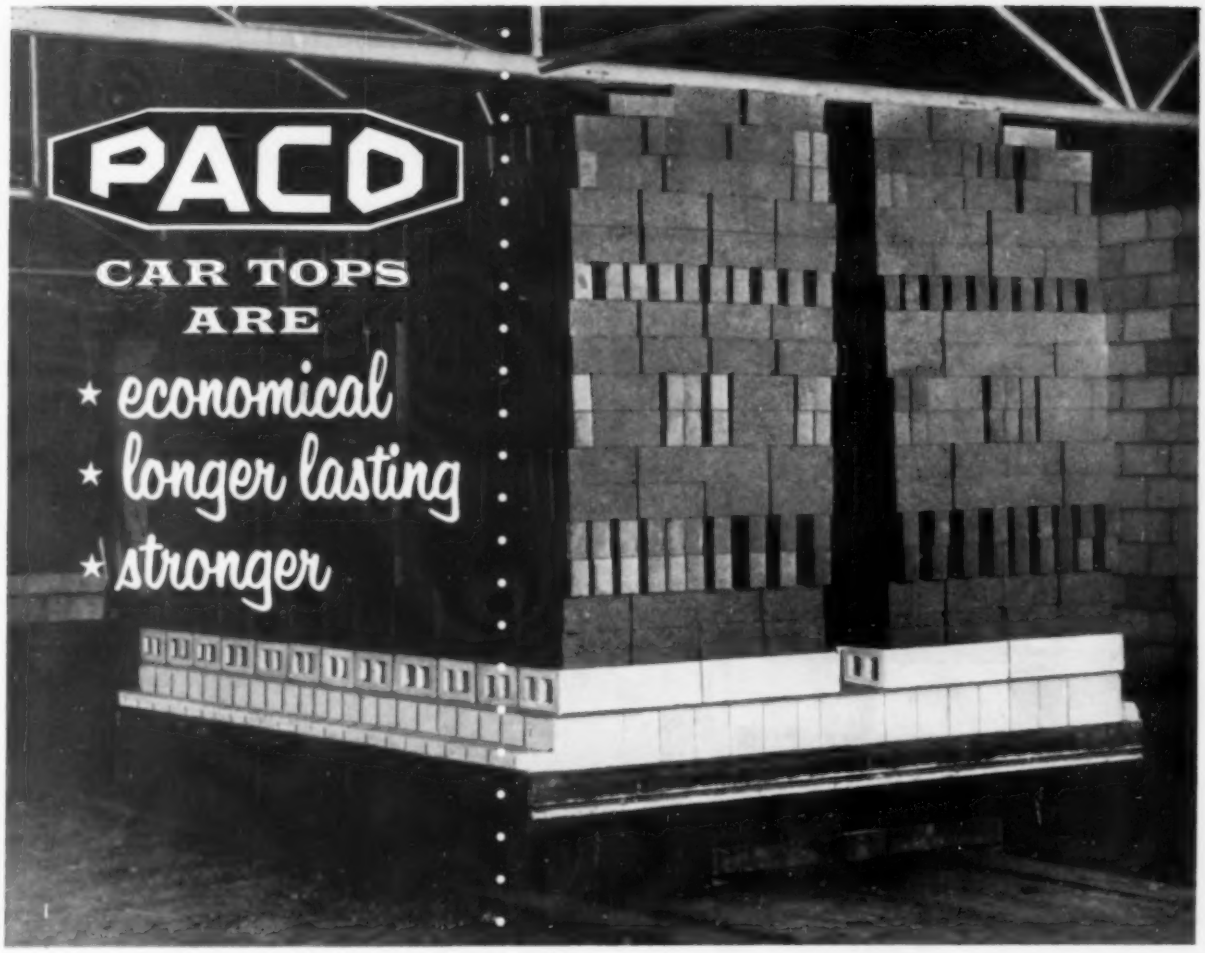

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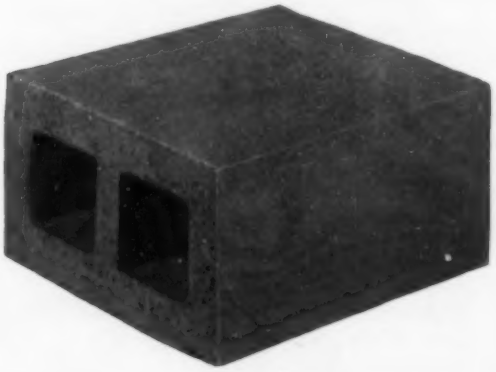

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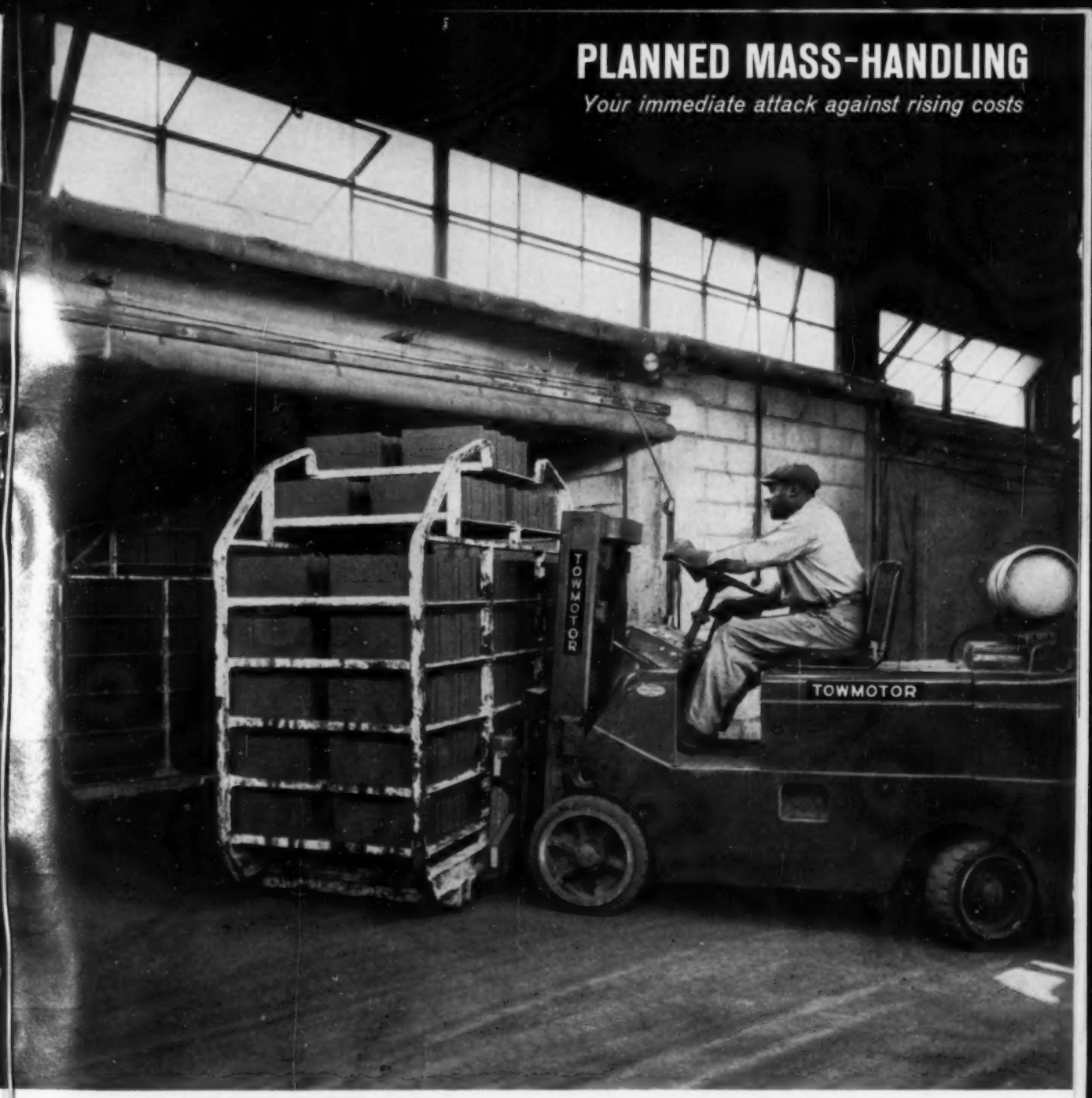

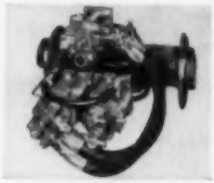

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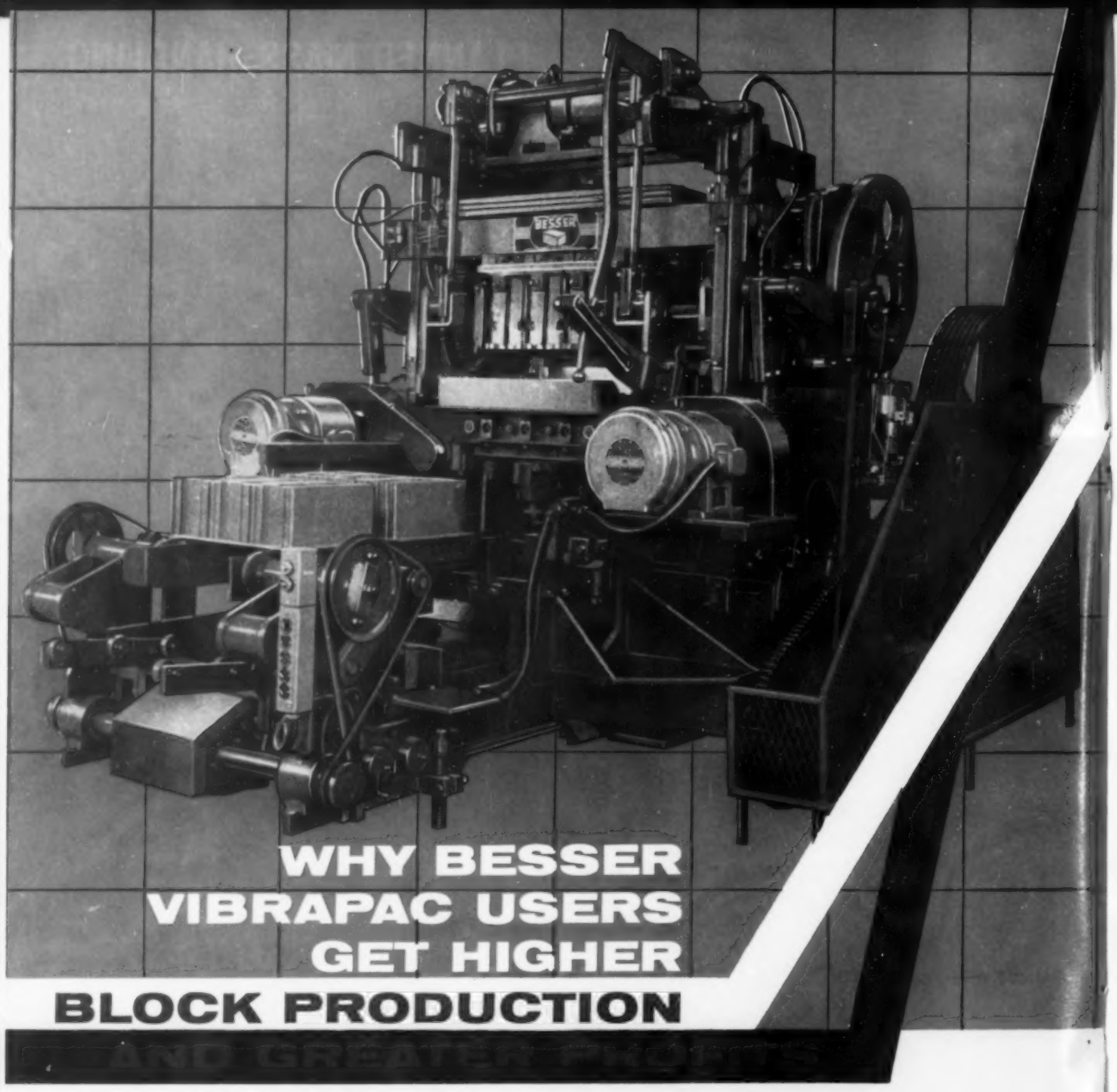

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It's not a question of "OR" but "AND"

For the structural clay products industry, the year 1960 presents a peculiar situation as far as sales go. On the one hand, all predictors say that non-residential construction will be up by as much as 15%—a promising market to go after. On the other hand, the same forecasters say that housing construction will be down as much as 8%—a market that really consumed clay products.

So—the industry is at the crossroads, whether to advertise and promote to the housing market and increase the use of clay products in a slipping market to maintain total sales or, to advertise and promote in the non-residential market to establish brick in a market which is not primarily brick.

The answer is not in the word "OR" but in the word "AND" being substituted for "OR".

There is no question that the impetus built up by promoting to the housing market should not be curtailed. In fact, it should be increased so that even a greater percentage of the houses built in 1960 use clay products.

It is also important that clay products once again establish themselves in the non-residential field as a modern material along with aluminum, stainless steel, glass, and porcelain enamel. Since this is an expanding market it might be more timely now to jump in with both feet and capture a major part of the expansion.

"AND" is the real approach to 1960—Advertise and promote to get more brick in housing AND advertise and promote in the non-residential field to get a real toehold in that expanding market.

Automatic Controls, Streamlined Processing Aid in Producing

High Grade LW Aggregate at England,

Hammer mill and screen are in closed circuit with products being removed with the three conveyors at left.

Surface clay, streamlined processing and automatic controls are combined to economically produce a high grade lightweight aggregate at the England, Ark. plant of the Arkansas Lightweight Aggregate Corp., a plant built to supply the Central Arkansas block and ready mix industry with a stable supply of clay aggregate.

The clay pit is located ¼ mile from the plant and is a surface deposit. Recovery is with a Hancock self-loading pan pulled with a John Deere Tractor. The paddles that load the loosened clay are driven with a power take off from the tractor and the clay is then moved into a pole type storage building 75 x 200 ft. before being used. A TD-9 with front end loader is used to push the stored clay into a 45 HP toothed crusher for sizing before the clay is lifted with an elevator to a 165 yard storage bin. Ten thousand yards of clay can be stored for use during inclement weather.

From the bin the sized clay is moved with a belt feeder via a 120 ft., 10 inch conveyor to the kiln. The kiln is 8 x 125 ft and was supplied by Standard Tool Co. It is driven with 20 HP and has been equipped with a Land Radiation Pyrometer. This device supplied by Robert Shaw-Fulton controls the heat at the critical end of the kiln and records continuously. It is adjusted to sight just back of the bloating section and is set just below the temperature at which rings start to form. This device has been credited by the plant managers as allowing maximum product while largely eliminating rings.

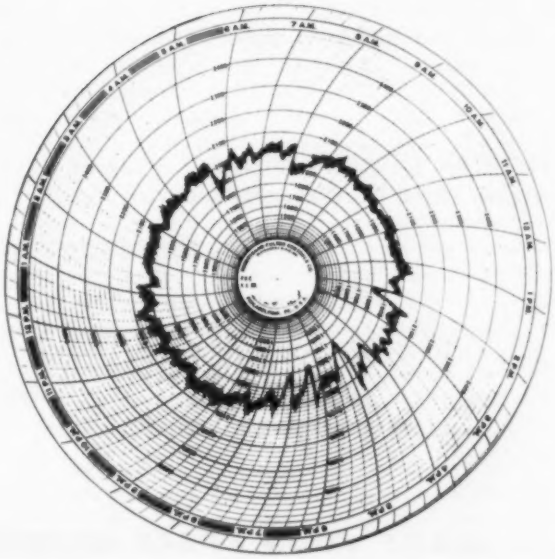
The pyrometer controls an air motor on the gas valve that makes the actual changes in heat input. Temperature variation is controlled within a narrow range of 40-50° with only periodic swings beyond this limit.

Bloated clay falls into a pit at the exit end of the kiln and after cooling with water is lifted with a ½ yard Insley claw. Primary size reduction is made with an American roll crusher which also acts as a feeder to the first screening operation. The three deck Cedar Rapids screen cuts ⅛, ⅜ and ¾ inches with all oversize being processed through to a Cedar Rapids hammer mill driven with 75 HP. Depending on the size requirements the ¾ inch screen is sometimes removed and part of the ⅜ to 3/16 cut is milled for greater production of fine material. Ground clinker is

Arkansas Plant

Lab. technician Richard Workman checks partical size distribution of shipment before it leaves the plant.

Single 8 x 125 ft Standard Tool kiln is used at plant.



Record of kiln temperature variations over a twenty four hour period.

High class operator is needed to run pan that is sometimes used in the pit.

moved by conveyor to storage. Three piles are stocked: 3/16 to dust, ⅛ to #8 and ½ to #4. Underpile recovery is made with a 240 ft. conveyor that dumps into either gondola cars on the plant's siding or into trucks. Total capacity of these piles is 5,400 yards.

Current production runs 315 yards a day with 13 men. This includes personnel to operate the kiln and clinker pit three shifts and grinding plant and loading on a two shift basis. A laboratory is maintained to insure ridged adherence to specifications. The block mix weighs 1,650 lbs. per yard and will yield 34 block per ton. The company has reports of 190,000 lbs. on 24 block per bag yield.

The product is a fine grain clinker with a great number of extremely small air spaces. This is credited with being responsible for only a nominal increase in density as the size of the particle is decreased.

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The Role of Refactories in Steel's Future

by
W. S. Debenham
Chief Research Engineer—Refractories
Applied Research
United States Steel Corporation

This viewpoint of a steel ceramic engineer paints a picture of greater use of higher type refractories and a lesser use of the refractories as supplied in the 50's. The total consumption in the 60's will be maintained. Expansion will occur in special refractories. Add to steel's use of refractories the need in other industries, and a good, health and longer future can be forcast for the refractories industry in the 60's.

The past two years have seen great stirrings in the refractories industry. New refractory plants have been built, some existing plants have been abandoned, mergers have taken place, and market surveys have become the order of the day. These activities in large part are reactions to the rapidly changing picture of steel producing and processing techniques, and reflect the efforts of individual companies to assess the effect of these changes and adjust their operation accordingly. However, from the number of questions that are still being raised, many appear to be certain only that steel plant refractory requirements are changing, and are far less certain as to just what the changes will be or how they will occur. Accordingly, it was felt that an analysis of the situation from a consumer's standpoint might be timely and interesting.

In order to get a fair picture of where we are heading, it is always helpful to do a little backtracking and see where we've been. Since we are considering steel plant refractories, and since the types and amounts used are so dependent on the type of steelmaking process employed, it is necessary to examine these processes. In a recent article[1] the rise and fall of different steelmaking methods in Germany was plotted through the years from 1800 to date. On a logarithmic chart, the author shows that production by each process followed a parabolic curve, with the passing of each peak signaling the rise of a new process. To check the validity of this pattern for the American steel industry, a similar chart was prepared from AISI steel production figures from 1877. The results, as shown in **Figure* 1, are quite similar to the German story, although different processes are involved. In the American picture it is seen that both the crucible and bessemer processes peaked around 1910 with the rise of both the open hearth and the electric furnace processes. Crucible and bessmer steel production have ceased to be serious factors in our total production, but open hearths and electric furnaces are still vigorous, and account for 96% of our steel today. But, it is quite apparent that their supremacy, and particularly that of the open hearth, is now threatened by a new process—oxygen steelmaking. In fact, projections of the uncompleted parabolic curves for these processes show that the open hearth is just now "peaking" while the electric furnace "peak" may be only a few years away. The curve for the oxygen process is rising steeply in conformance with the various published predictions[2] that within 5 to 10 years, 40 to 50 million tons will be produced by this means. An indication of this rapid rise is found in AISI figures showing that 42% of the 6.9 million ton increased steelmaking capacity at the start of 1959 was for oxygen steelmaking. And, it is well known that several additional oxygen steelmaking plants are scheduled for construction in the next 5 years.

*See Charts on page 48

Forecasts Based on Steel Production

But, forecasts of refractory usage must be based on steel production and not potential capacity. What does 1970 look like in this respect? A recent Fortune[3] article quoted Armco Steel expectations of a steady rise in steel production from the 113,000,000 tons produced in 1957 to 144,000,000 in 1970. According to our chart, then, this would indicate that the 1970 actual production by process should be approximately as follows:

Open Hearth	— 80 - 85 MM
Oxygen Steelmaking	— 45 - 50 MM
Electric Furnace	— 10 - 12 MM
Bessemer & Crucible	— Less than 0.5 MM

What does all this mean in terms of types and amounts of refractories required? We can be certain that it means change, and looking back, we find that change is no stranger to the refractories industry. Still, what lies ahead now appears to make past events pale by comparison. For, despite various well-known landmarks in the history of the refractories industry, such as the change from clay to silica refractories in by-product coke ovens, the virtual loss of clay boiler refractories to water-wall

FIG. 1—ANNUAL STEEL PRODUCTION FOR INDICATED PROCESS

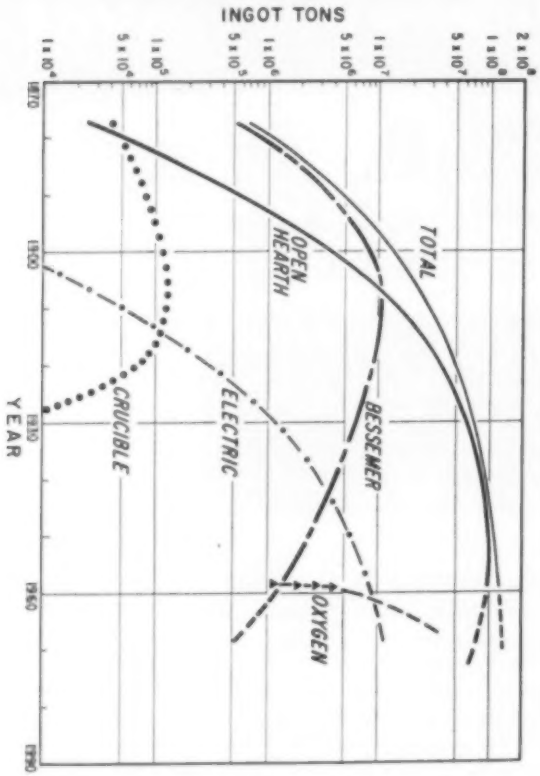


FIG. 2—TOTAL REFRACTORY SHIPMENTS—ALL INDUSTRIES

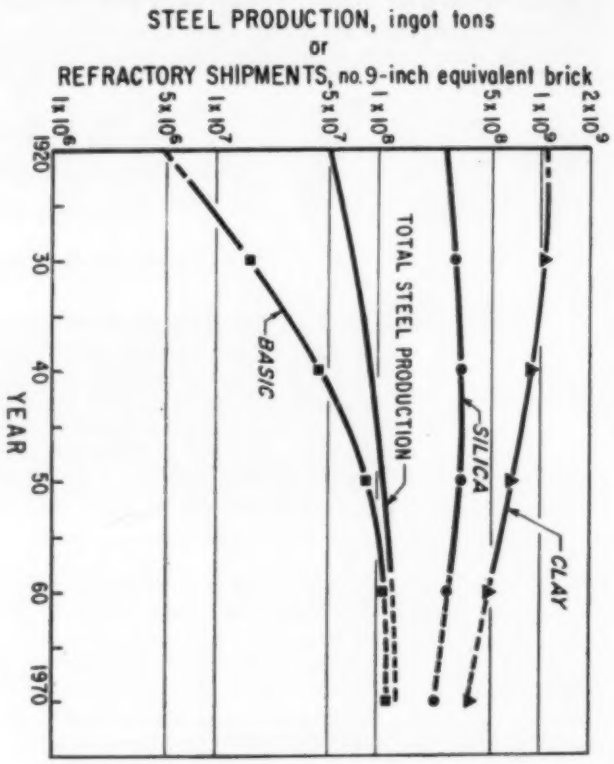


FIG. 3—TRENDS IN OPEN HEARTH REFRACTORY CONSUMPTION

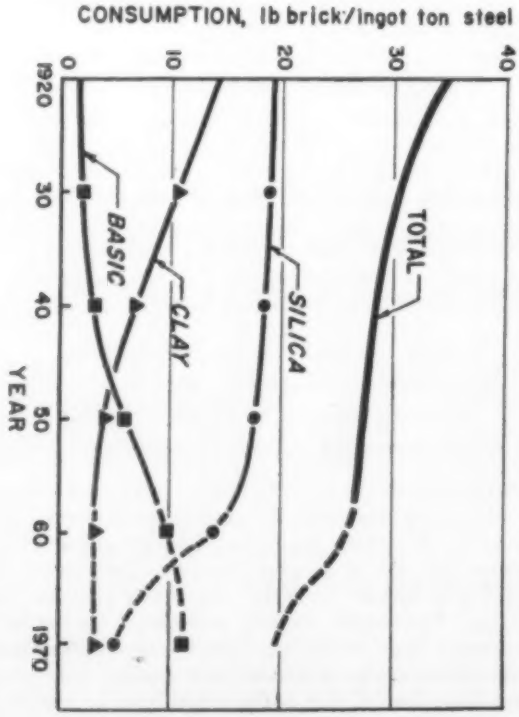
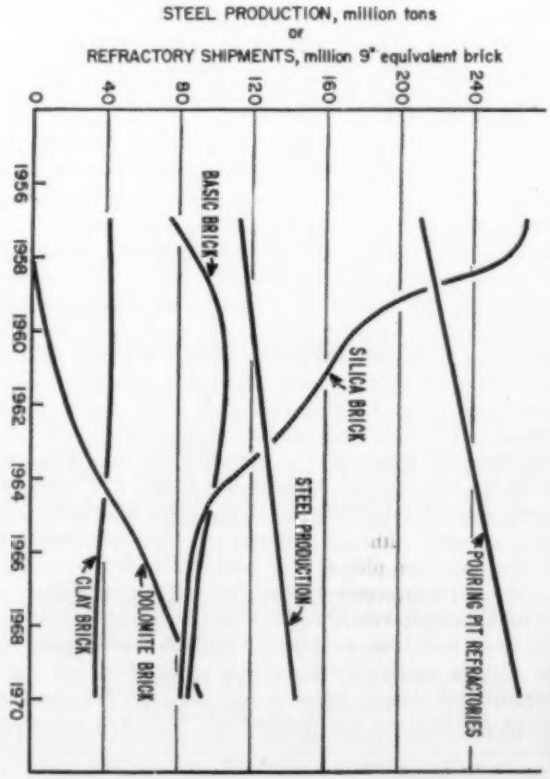


FIG. 4—PROJECTED REFRACTORY SHIPMENTS FOR STEEL MELTING



construction, and the elimination of the clay locomotive arch tile business with the adoption of diesel engines, refractory production has been characterized by a rather orderly, but significant trend since the turn of the century.

This is the shift from acid to basic refractories—very gradual at first, but accelerating in recent years, with an accompanying shrinkage in total volume. Until recently, this change has been primarily at the expense of clay refractories, the order of play often going from clay to silica to basic. This is shown in the following figures for selected years for brick shipped since 1923.

Per Cent of Total Volume Shipped

Year	Clay Brick	Silica Brick	Brick Basic	Total Shipments (Million 9" Equivalent)
923	80.1	19.0	0.9	1,370
929	76.0	22.7	1.3	1,300
942	70.6	26.6	3.7	1,340
951	65.6	27.1	7.3	1,305
957	60.1	29.7	10.2	1,160
959	58.4	28.4	13.2	715

Annualized)

Thus, it is seen that volume-wise, refractory shipments ave been going downhill since 1942. In fact, clay brick hipments were at their all-time peak in 1923, and silica rick in 1951, despite the fact that the biggest years for teel production were still to come.

Figure 2 is a graphic presentation of this situation nce 1923. Again, the logarithmic plot is used to conense the wide spread in figures. Also, the curves have een projected for the next 10 years to 1970. It is seen hat although steel production will continue to rise to bout the 144,000,000 mark in 1970, total clay and silica rick shipments are expected to continue their decline—ilica quite sharply. Basic brick, on the other hand, have ome up rapidly, but are expected to reach a peak about 1961 and then decline slightly. While it may seem a little presumptuous to forecast total refractory production on the basis of the steel industry, it is well established that steel accounts for approximately 65% of all refractories, and changes in steel plant refractory practices always signal major changes in total refractory production. It may be of interest now to examine in more detail the present and future refractory requirements of major refractory consuming units to see just how these changes are being made.

Steel Melting Furnaces

The history of refractory consumption in the open hearth accurately reflects the picture previously given for the whole refractories industry, and is shown in *Figure* 3. Old Carnegie Steel Company records were the source of consumption figures for the 1920 period and these check closely with those given in a survey reported in 1923.[4] Basic brick were almost non-existent, amounting to 2 lbs/ton and largely confined to the hearth and slag line. Clay brick consumption was high at 14 lbs, and these were used extensively below floor level. Considering that silica brick did all the rest of the work, the consumption of 19 lbs/ton seems very good. For the next 20 years this picture changed only slightly, as basic brick began, with many misgivings, to creep into endwalls and sidewalls, and silica brick began to move downstairs, pushing clay brick back into the checker chamber where they belonged. With the war, basic brick usage increased, and increased further in the late forties as basic ends were adopted, and the first tentative roof trials were made.

In the mid-fifties, silica consumption began to drop as a concerted drive on quality became effective, and as more basic brick were used. It is the author's firm belief that were it not for the greatly improved silica brick refractoriness in this period, the dramatic change now going on with basic roofs would have been forced earlier by the increased firing rates and drive for production. Fortunately, the timing of the development of an economical basic roof in late 1957 was just right to save silica roofs from trouble, as silica brick now have nothing further to offer against increasingly severe operating conditions. At present, with a 20% conversion to basic roofs, experience indicates that all-basic furnace refractory consumption will approximate 3 to 5 lbs of silica, 10 to 12 lbs of basic and 3 to 4 lbs of clay brick, and this is substantially the projection for open hearths in 1970. There is reason to believe that as improvements are made in basic roof brick through superior raw materials and better quality control, these consumption figures will be further reduced.

It is interesting to note that some recent German figures[5] indicate a similar trend to more basic construction in open hearth furnaces, as follows:

	1948	1950	1955
Silica brick lbs/ton	36.74	28.44	19.84
Basic brick lbs/ton	6.88	6.76	13.60

In this case, the increase in basic refractories represents a change back to basic roofs which had been generally abandoned, of necessity, during the war years.

It is believed correct to assume that the open hearths operating in 1970 will nearly all be all-basic furnaces because many of the smaller, less efficient furnaces that might otherwise be expected to continue with silica roofs will likely be out of operation because of the oxygen steelmaking process. This process now seems certain to employ tar-bonded dolomite or dolomite-magnesite linings for some time; for to date, all efforts to use conventional types of basic brick in this country have failed to equal the performance of tar-dolomite brick, let alone the costs. Hence, as oxygen steel production rises, and eventually, somewhat at the expense of open hearth production, total basic brick usage will level off and then drop in favor of this new type of basic brick. By 1970, if the cited predictions prove true, production of tar-bonded brick may equal or surpass that of basic brick, assuming an average consumption of 18 to 20 pounds of dolomite brick per ton of oxygen steel.

As this situation develops, other changes occur in silica and clay brick and in granular fettling dolomite, as the oxygen furnace needs none of these. It is small wonder then that many refractory producers who were scrambling to stay apace with changing refractory needs by building or expanding basic brick plants because of basic open hearth roofs, rae now tacking on facilities

for tar bonded dolomite brick manufacture, and still others are wondering what to do with existing clay and silica brick plants.

The possible net effect of these developments on total refractory requirements for steelmaking furnaces from 1957 to 1970 is shown in *Figure* 4. This also includes the requirements for electric furnaces, which in a mild way, have been undergoing some changes themselves in refractory usage. This change is the first to give the fireclay and high alumina brick producers something to cheer about, for these types of brick have been replacing silica brick in roofs in many furnaces. Electric furnace practice is so variable with different types of steel produced that consumption figures are almost meaningless unless qualified by type of steel produced. However, for the industry, electric furnace consumption was estimated at 11 lbs of basic brick, 6 lbs of clay or high alumina, and 9 lbs of silica brick.

Another stable, bright spot for certain clay refractories producers is pouring pit refractories, also shown on *Figure* 4. Regardless of steel process or type, consumption of pouring pit refractories remains remarkably steady. Assuming all ladle brick, sleeves and nozzles listed in the Census Bureau reports "Facts for Industry" are used in the steel industry, ladle brick consumption is a consistent 12 lbs/ton and sleeves and nozzles 2 lbs/ton.

Blast Furnaces And Stoves

Developments today in iron production are having the effect of shifting the refractory problems in this area from the blast furnace to the stove, and from the stove back to the tuyeres This is because the beneficiated burdens now being used permit much higher hot blast temperatures, and opportunities for great benefits in coke consumption and production rates. The upper limit on blast temperature is not precisely established, but it is significant that studies are being initiated to determine how blast temperatures as high as 2800 F might be achieved. When it is realized that until recently 2100 F was the top dome temperature for stoves, the potential problems in not only the stove itself but also in the mains, valves, tuyere stocks and blow pipes, are readily appreciated. Stoves for the delivery of higher blast temperatures demand a careful compromise between structural and refractory stability and the demands for higher heating surface through increased height of checker settings with decreased checker wall thickness. Two approaches are open: 1. Use more expensive high alumina or even basic refractories in the hotter zones in an effort to maintain present stove durability, or 2. Continue with the more modest priced high duty, super duty, and semi-silica brick, and anticipate more frequent repairs. In the latter procedure, there is a possibility that some of the silica brick being discarded by the open hearth may find a home in stoves. Both approaches are now being made, but it will be some time before the most economical refractories for stoves will be determined.

As for the blast furnace itself, the new, more porous burdens may actually improve stack life by minimizing "hot spot" developments and operating irregularities. Zoned linings of high duty and super duty brick will continue to be used. The only major threat to this status quo is the possibility that at some future date stack refractories may simply be eliminated entirely in favor of a water cooled shell, or, less drastic, a thinner monolithic refractory lining. A small portion of the blast furnace refractories has already been lost to the conventional refractory producers by way of the substitution of carbon brick in hearth walls and bottoms, and, increasingly, in the bosh. Carbon usage in these locations may be expected to expand to practically all furnaces, reducing overall clay brick consumption for the blast furnace. Despite their impressive size and initial refractory requirements, however, blast furnaces and stoves do not constitute a major portion of the steel plant refractory bill, the refractory expenditures for these units, in an integrated steel company, being as little as 5% of the total in some cases.

Soaking Pits And Reheating Furnaces

The major change in refractories for soaking pits and reheating furnaces is the continuing trend to monolithic construction with castables and plastics, at the expense, again, of fireclay brick. Of these two, plastics are winning out for the more severe, higher temperature applications, and high alumina (90% Al_2O_3) types are replacing basic brick in some applications such as soaking pit slag lines and reheating furnace hearths. In many of the lower temperature annealing furnaces, fireclay brick have also been completely replaced by insulating fire brick.

The combustion chamber of most sinter machines were built of first quality and super duty refractories. It was found by increasing the temperature and speed of the sinter machine, that existing units could triple production. This increase in temperature causes the combustion zones to become blocked with iron oxide sticking to the refractories. It was necessary to go to the use of suspended basic brick in order to eliminate the effect of iron oxide on the refractories. Most new sinter plant installations are being constructed with basic brick in the combustion chamber.

Over the last ten years various types of refractories have been used as working linings of soaking pits (fire stone, silica, semi-silica and super duty). On original installations most of these refractories served satisfactorily, however, maintenance is a problem. Repairs are made by shutting down a pit and rebuilding. Many soaking pit operators had trouble scheduling pit repairs to coincide with the open hearth furnace rebuilds. In order to maintain the operating efficiency of the soaking pit repairs are being made by guniting castables or installing plastic firebrick.

The service life of these two materials proved to be equal or better than previous materials. Many of the new pit installations are now being lined with plastic firebrick. Existing installations are being replaced with plastics or castables.

1. Evolution of Steelmaking Methods, Schenk, Iron and Coal Trades Review, February 20, 1959, p. 425.
2. Barrons, March 30, 1959.
3. Fortune, November, 1959.
4. "Where Refractory Bricks Go", Iron Age, August 16, 1923, p. 402.
5. Stahleisen-Kalender, 1959, p. 70

Missouri School at Rolla Ranks Among Best

The Missouri School of Mines and Metallurgy is a division of the University of Missouri established through a Federal Land Grant accepted by the State of Missouri in 1863. The School is located in the city of Rolla, current population 15,000, which is one hundred and six miles southwest of St. Louis on U. S. Highways 66 and 63 and the St. Louis-San Francisco railroad all of which provide excellent communication with the industrial and cultural centers of the state. The campus, located on a 200 acre tract in the northwest section of the city, consists of seventeen classroom and laboratory buildings, four administrative, utilities and services buildings, four dormatories with facilities for some 600 students, a central cafeteria, student union, gymnasium, and permanent apartments for 48 married students. This year the seven engineering departments, five science departments and two service departments is staffed by a faculty of more than 200, who, during the academic year, will offer more than 400 individual courses to 3000 students.

Fourth in Ceramic School Series

The Department of Ceramic Engineering was established on this campus in 1926. Prior to this the refractories and other ceramic industries of the State obtained technical personnel from the eastern schools, which made it difficult to maintain a stable technical staff. In an effort to rectify this situation and to meet the needs for future growth, representatives of the Missouri Refractories Association and the Missouri Clay Association met on the campus on December 1, 1925 and urged the administration to consider the establishment of a chair of Ceramic Engineering.

In response to this meeting, the Board of Curators of the University authorized the establishment of the Department in January, 1926. The late Dr. A. P. Green and Dr. J. B. Arthur were largely responsible for the success of the industries' efforts in this instance. Following the action by the Board of Curators, Dr. M. E. Holmes was appointed to the Chairmanship and classroom instruction was initiated in the fall of 1926 in space provided in the Experiment Station Building, now known as Fulton Hall. There were fifteen students enrolled in this curriculum, and the first two degrees in Ceramic Engineering were conferred in the spring of 1928 upon Charles A. Freeman, Harbison-Walker Refractories Company and William K. Schweickhardt, Walsh Refractories Company. Through the untiring efforts of Dr. Holmes the facilities were rapidly expanded and students recruited; by 1930 the student body numbered thirty-nine.

To date a total of 293 Bachelor of Science, 30 Master of Science and

X-ray lab

10 Doctor of Philosophy Degrees have been conferred. The fact that 26% of these alumni are currently employed within the state of Missouri is certainly a tribute to the vision and courage of those individuals responsible for the establishment of the Department.

Largely through the efforts of Dr. Holmes the Missouri Clay Testing and Research Laboratories were established in 1928 under the general direction of the Department. This facility continued to function for the next 20 years providing free technical advice and information to the citizens and industry of the state as well as technical service on essentially a cost basis.

Facilities

The Department currently occupies some 11,000 square feet of floor space in Fulton Hall; about 1300 square feet of which is used for offices and classroom and the remainder for laboratories. The laboratories are divided into several sections. The Raw Materials Storage and Preparation laboratory contains over 100 storage bins of 200 pound capacity, jaw and roll crushers, wet pan, hammer mill, magnetic separator, and vibratory sieves. The body preparation and forming laboratory contains a complete size range of ball mills, both porcelain and rubber lined, twin shell blenders, a Simpson mixer, an auger machine with deairing system, blungers, jiggering machine, an 8 and 135 ton hydraulic press, isostatic press, spray bath, driers, and assorted steel, brass and plaster molds.

The facilities of firing include four Glo-bar furnaces with automatic temperature programming through saturable reactor controllers, gas fired pot furnaces for enamel and glass fusions, Kanthal wound and AT-Type, Tublar Glo-bar, atmosphere furnaces, and a variety of Kanthal and platinum wound tube furnaces. Testing equipment includes a 300,000 pound compression testing machine, 5000 pound tension and compression testing machine, sonic testing equipment, gas expansion porosimeter, permeability apparatus, quartz tube dilatometer, differential thermal analysis equip-

View of furnace room

ment and thermal graviometric analyzer, granannular carbon resistor and gas fired P.C.E. furnaces, several systems for sub sieve size particle determinations, super centrifuge, X-ray spectrometer, gas tube X-ray and recording densitometer and a recording spectrophotometer. The graduate laboratory, adjacent to a complete machine shop, affords adequate work space for those engaged in original research.

Staff and Academic Program

The present staff consists of three members: Dr. T. J. Planje, Chairman, G. Edwin Lorey, Assistant Professor and Robert E. Moore, Instructor. This staff is currently responsible for presenting 24 undergraduate and graduate courses for a total 63 hours of credit as well as the departmental administration.

The current curriculum includes a total of 22 semester hours of chemistry, including physical chemistry and metallurgical thermodynamics; 21 hours of mathematics, including differential equations; 13 hours of physics, including atomic and nuclear; nine hours in mechanics, including dynamics; six hours in electrical engineering and electronics; 20 of rhetoric, literature and humanistic-social studies, 14 hours of electives and 27 hours in ceramics. A total of 156 semester hours are required for the degree.

During the past several years the required ceramic engineering course work has been reviewed and revised on several occasions in an effort to develope a logic sequence of presentation and a more quantative treatment of the subject matter and to eliminate as much as possible and undesirable repeated presentation of basic concepts. As a result of this effort the classical ceramic engineering course work is being presented in some four semester hours less time than previously required, making it possible to add to the curriculum course work in the crystal chemistry and elementary solid state physics of ceramic systems and the physical-structural properties of the glassy systems. It is felt this latter course work will afford the ceramic engineer a better understanding of the behavior of ceramic products as engineering materials as well as a more fundamental approach to problems in production and research.

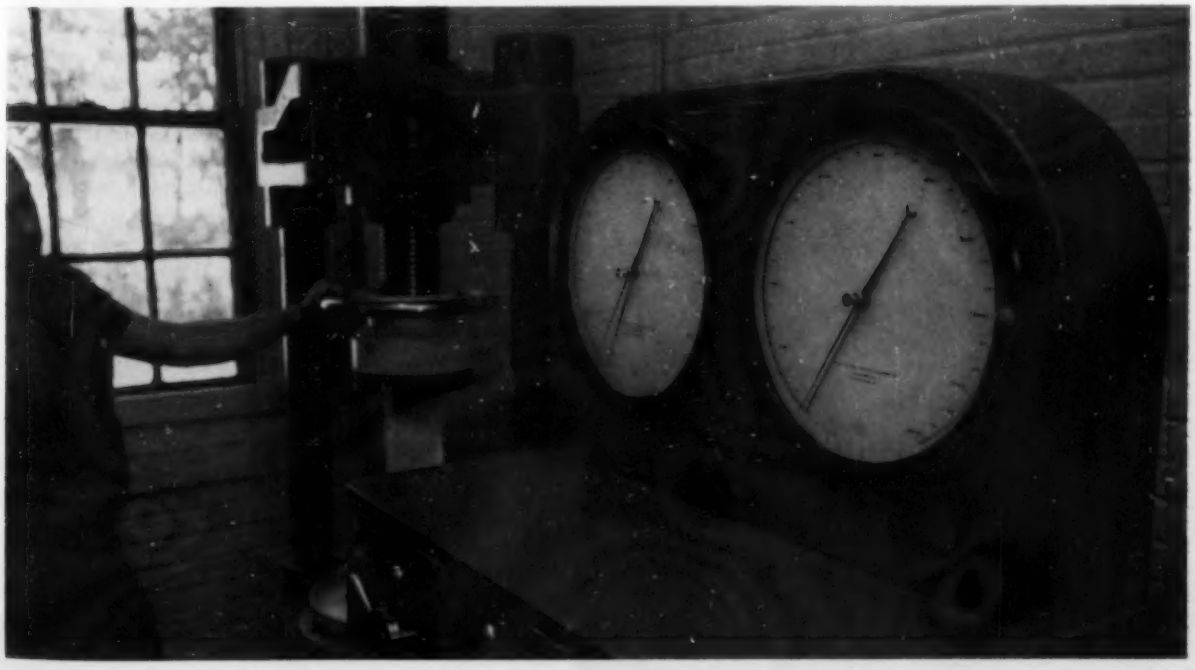
Included in the current departmental offerings are two new courses in nuclear ceramics. These courses are required for students majoring in nuclear engineering and may be taken for elective credit by ceramic engineering majors. The courses each consist of two hours of lecture and three hours of laboratory per week, and seek to present the technology related to the use of ceramic materials in nuclear systems and devices as well as a review of the general nuclear properties of ceramic materials. The laboratory course work currently seeks to introduce the student to forming and firing techniques currently employed to produce dense oxide, carbide, nitrate, sulphide bodies, and the radiation stability and corrosion resistence of these materials. The latter phase of this work will be greatly facilitated by the completion of a reactor facility on the campus, which should be ready for operation by September, 1960.

Scholarships And Aids

In 1955 Dr. J. B. Arthur established a scholarship-loan fund for students in Ceramic Engineering which is not only self perpetuating but self expanding. The earnings from the principal of this fund during the past year have made possible the granting of four scholarships of $500.00 each to Junior and Senior students in the Department.

The Mexico Refractories Company, Division of Kaiser Aluminum and Chemical Sales, Inc., maintains a $400.00 annual scholarship intended primarily for the outstanding Sophomore. This single grant has proven most helpful in attracting students to the Department, and action is being taken to seek additional assistance for Sophomore and Freshman students.

Compression Testing Machine in Testing Laboratory



Webster Brick Saves By Using Tractor Scraper

The clay and shale mining problem at the Roanoke, Va. plant of Webster Brick Co. was simple enough to state. All they had to do was reduce operating cost while mining in 12 different locations.

Webster's solution to the problem was deceptively simple. They replaced the two 9-yard tractor scrapers being used with one 19-yard machine, and tailored their mining technique to get an annual production of 125,000 tons.

In September of 1958, before purchasing the "Michigan" Model 210 Tractor Scraper now in use, Webster's plant management team took a close look at experience they had piled up with tractor scrapers; then called for competitive demonstration of several larger machines. Satisfied with the results, they traded-in one of their old machines, and kept the other as a standby.

Overall mine operating cost has substantially declined since they employed the bigger scraper, according to R. M. Bethune, plant superintendent. Among the economies effected is, for all practical purposes, elimination of one machine and its attendant maintenance, plus 20 per cent reduction in fuel consumption.

The hills surrounding the plant—one of four operated by Webster—constitute the mine area. Soil used in manufacturing the 47 types of brick produced here includes alluvial clay, red plastic clay, and blue and sandy shale varying from soft to very hard. These materials occur in seams by themselves and in seams that overlap, making it impossible to get all of the materials needed in any one location. Result has been establishment of 12 loading stations.

Another interesting feature at this mine is the strict attention paid to contouring the hills as material is

R. M. Bethune, (right) plant superintendent for Webster Brick Company at Roanoke, Virginia, discusses contour control in company's clay and shale mine adjacent to the plant with "Michigan" Model 210 Tractor Scraper operator, Garvin Ferris. Strict control of contour helps insure good drainage and better operating conditions in the mine.

removed. This procedure results in a well drained mine that usually permits reopening within half-a-day of a heavy rain when drying conditions are otherwise good.

Webster maintains a covered stockpile containing a 12-week supply of mixed materials ready to charge the hammermill. This inside work is performed by a "Michigan" Model 75A, 1½-yard Tractor Shovel. Keeping this 200-foot long, by 100-foot wide, by 40-foot high pile full is the tractor scraper's responsibility.

Soil conditions in the mine, says Bethune, require application of a tractor scraper that possesses fast self-loading and haul speeds coupled with stability and positive load ejection.

Set Daily Pattern

A preset loading pattern for the tractor scraper is set daily by plant management. The "Michigan" runs from one of the 12 loading points to another on haul cycles ranging from a quarter of a mile to three quarters of a mile in length.

Wherever possible, the machine loads itself downhill. In certain locations, however, the material to be mined lies in bowl shaped pockets between the hills, requiring on-the-level and uphill self-loading.

"Experience has shown us that our tractor scraper's 262 horsepower engine driving through a torque converter and automatic shift transmission is what is needed for this operation," Bethune reports.

In any pass the machine makes, it is likely to encounter deposits of shale of varying hardness. With this in mind, the operator uses his hydraulically controlled scraper blade to take a one-inch cut over a 300 to 350-foot long strip. His ability to shift down almost instantaneously permits him to continue digging through the shale deposit and on into the clay without stopping the machine.

"However," says Bethune, "these soil and loading conditions make loading times variable. We balance our mining time table by taking advantage of haul speeds up to 31 miles per hour." Under normal operating conditions, the loaded

Continued on page 64

"Michigan" Model 75A, 1¼-yard Tractor Shovel works 16 hours a day charging hammermill with clay and shale mix taken from covered stockpile at Webster Brick Company's Roanoke, Virginia, plant. Kiln capacity is 120,000 bricks per day.

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Fast as trucks on between-job moves

Obviously, one of the Michigan's most important assets has been speed. The unit drives almost continuously from loading site to loading site around the mile-square pit. Time studies show it moves as fast as trucks on paved roads.

Twelve-yard trucks filled in 4 passes

Another important asset has been digging ability. In addition to handling stockpiled clays, the Michigan also loads previously stockpiled heavy, tough, often sticky overburden. In these materials, weighing up to 135 lbs per cubic *foot*, Michigan's excellent loading characteristics and low-level tipback help bucket loads *average over* the 2¼ yd SAE capacity. They weigh out at 3 yards per load. Company's 12-yard dump trucks are usually filled in only 4 passes. According to Operator Santiago Gomez, the Michigan is "easy to handle and restful to operate." "Controls are spaced right, and the torque converter drive eliminates clutching. Also, operator visibility is excellent . . . an important factor for pit safety."

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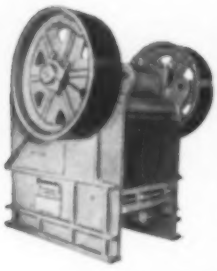

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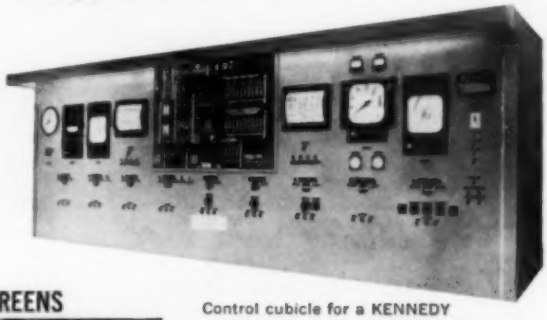

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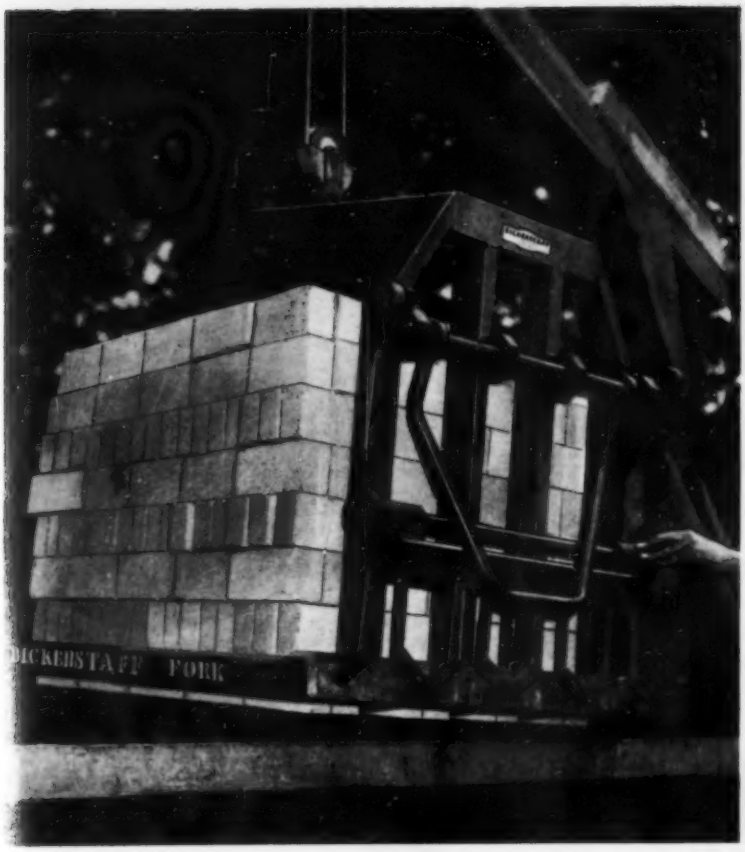

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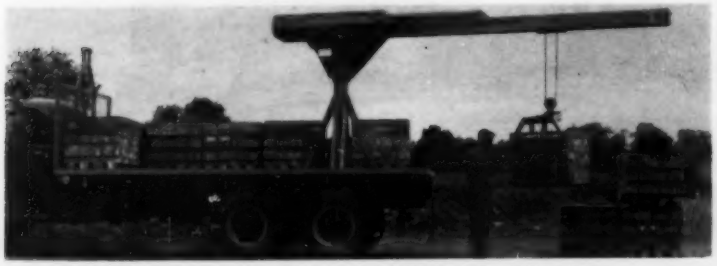

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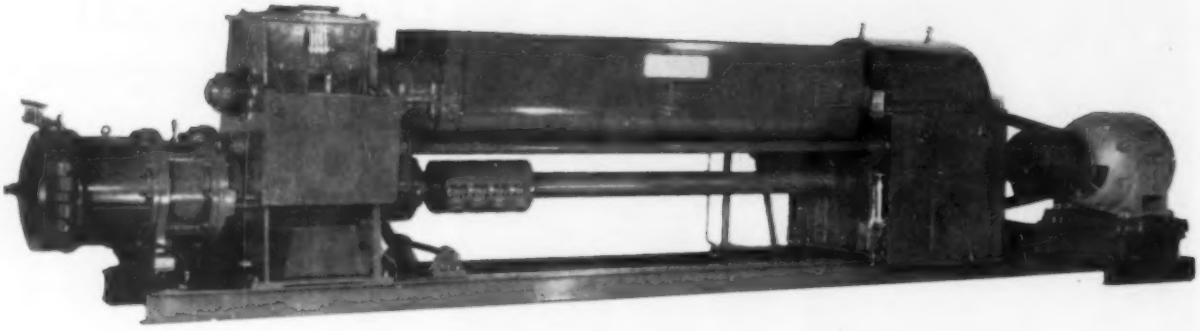

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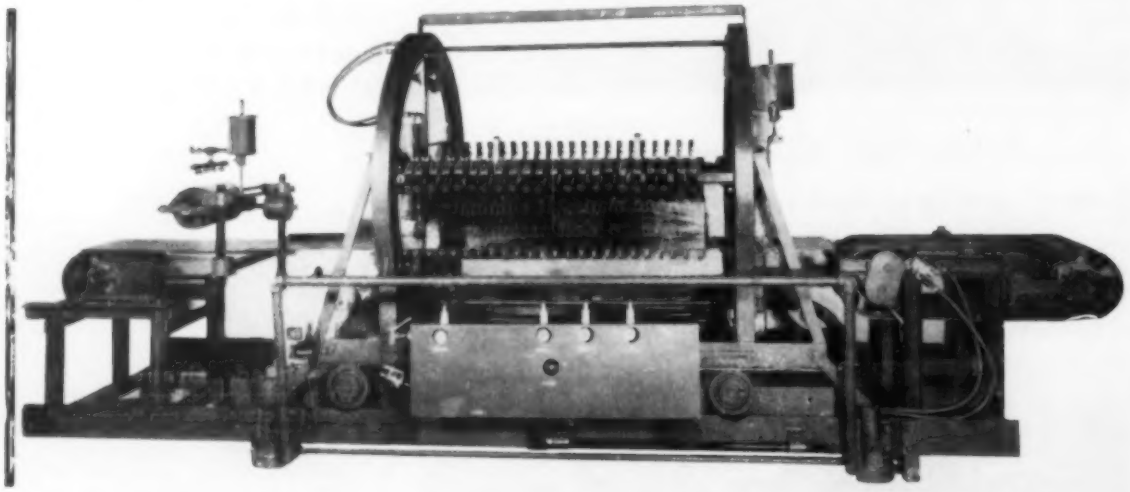

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Continued from page 29

General Refractories Company, Olive Hill, Kentucky, the objective of which was to modify the existing packaging system.

Designed for General Refractories was a centralized strapping station and gravity feed roller conveyor. The latter brings bricks to and away from the packaging station. Other features of the system are self-positioning strap guides built into the strapping station, pallet stops that are incorporated into the conveyor, overhead strapping dispensers, a strap gripper that pre-drapes strapping around the pallet, and air powered strapping machines suspended from overhead that tension, seal, and cut steel strapping.

Tucson Pressed Brick Company

At the Tucson Pressed Brick Company, Tuscon, Arizona, a field engineer designed a packaging system that effectively adapts the latest Steel Strapping Machines to the unique packaging problems posed by the use of field kilns. The system that was developed has proven to be both efficient and economical. Brick are strapped on adjustable scaffolds. A conveyor jig with two sets of strap chutes is set up on the scaffold upon which two stacks are strapped, and pushed together for removal in pairs.

Clay Pipe Gets A Package

The work of packaging finished clay products in the brick and clay products industry has not been restricted to the packaging of brick. Packages designed for ease of handling and packaging systems engineered for smooth materials flow have been developed for producers of such other clay products as drain tile and sewer pipe.

The packaging system at the Gladding McBean Company is representative of work in this very important field. At Gladding McBean, drain tile and sewer pipe is unitized directly from the kiln. Products can now be handled mechanically with great savings in time and labor.

The packaging of drain tile and sewer pipe presents special problems. For example, the physical layout of many drain tile and sewer pipe plants makes centralized strapping stations impractical.

Signode incorporated a safety strap into the packaging of Gladding McBean's sewer pipe that holds the pipe in place during unpackaging.

Acme-Link Belt Jointly Solve Problem

Mechanical handling, automatic strapping equipment and close supervision have resulted in a high degree of efficiency on the yard at Owensboro Brick & Tile Co. at Owensboro, Ky. The managers of the plant, early users of the 500 brick strapped cube and the Superlite unloading system, are concerned with the short-comings of the jig-formed cube and contacted its suppliers for proposals to streamline the strapping operation and eliminate as many of the bugs in the system as was possible.

After an intensive study of brick movement on the yard from kiln to loading area a machine was designed and built by Link Belt. This machine composed of many standard components from Link Belt's catalog as well as several specially designed features together with semi-automatic strapping equipment from Acme Steel Co. and several specially designed features, has eliminated loose straps and increased the efficiency of color blending.

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Continued from page 55

"Michigan" makes the haul roads in fourth gear at an average 25 miles per hour.

Weather Very Important

Weather is a dominant factor in Webster's mine operation. Clay containing too much moisture cannot be placed in stockpile, and the material to be used after freezing weather sets in must be especially dry. This results in peak mining periods in which the tractor shovel visits each of the 12 loading stations once an hour.

The wet summer of 1958 pointed up the value of winter mining with the tractor scraper, in which Webster used the shallow cut technique, working in solidly frozen material. In some instances they employed a scarifier pulled by a small crawler tractor; at other times they did not, depending on availability of the tractor.

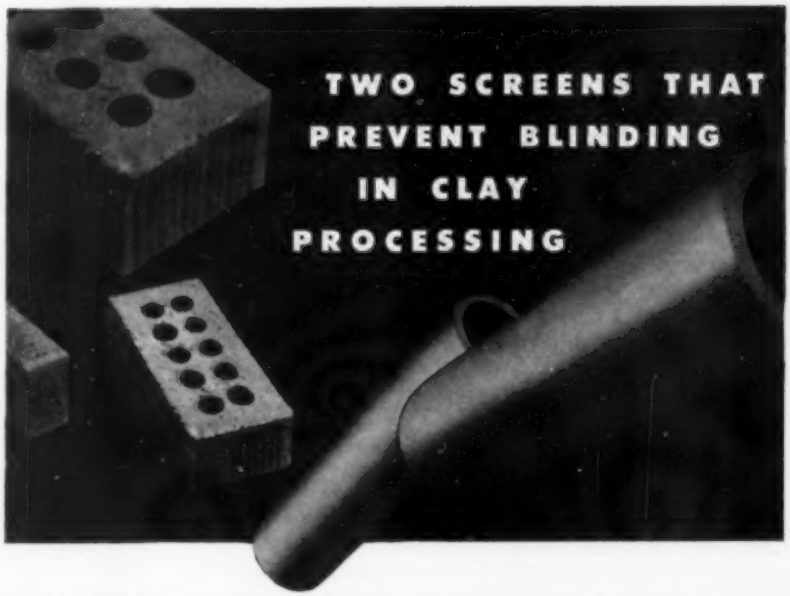
In the winter operation, it was found that solidly frozen soil would break up sufficiently in the scraper loading to be handled easily by the roll disintegrator that feeds the stockpile conveyor. Both in summer and winter, the tractor scraper dumps into a grizzly-equipped hopper which in turn charges the disintegrator.

Bethune and his tractor scraper operator, Garvin Ferris, are agreed that "better overall self-loading scraper production is achieved when we avoid heap-loading." They base their opinion on operations with both the "Michigan" and the units it replaced.

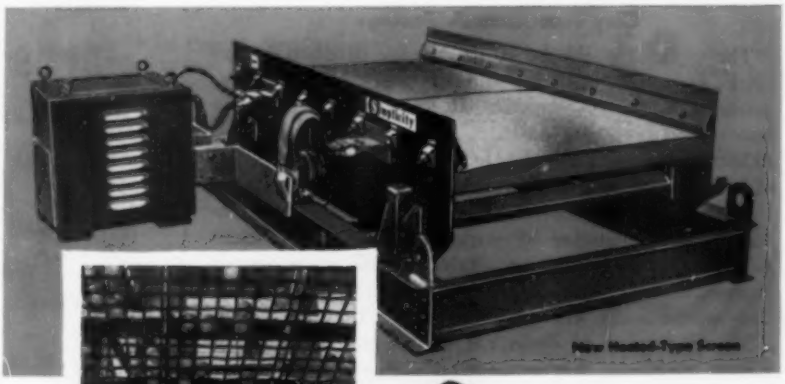
Currently, they are taking about 15 to 17-yard loads per pass. Rated capacity of the machine being used is 19 yards heaped, and 13.5 yards struck.

Webster's equipment maintenance policy calls for the operator to check all service points daily. Average time taken is 30 minutes.

Working the tractor scraper an average of 10 hours a day in the mine, Bethune expects to get two years from tires on the driving wheels before they are exchanged with the tires on the scraper bowl. Standard operating procedure calls for recapping these two tires after three years wear.



SIMPLICITY'S NEW HEATED-TYPE AND BALL-TYPE



New Heated-Type Screen

Underneath view of Ball Tray Deck

One of the greatest clay screening problems is that of blinding . . . the severe impairment of production by sticky, moist clay clogging the holes in the screen.

Where square openings are less than 5/32"; Simplicity Screens embody electrical heating. The screen wire is heated to approximately 140°, which prevents blinding, but does NOT DRY THE BED OF THE MATERIAL. This makes possible operation of the heating elements for only about 45c per hour. High-amperage, low-voltage current presents no safety hazard.

This new heated screen features an improved method of heat distribution, and easier screen cloth replacement—none of the heating elements are disturbed when changing cloth. Elimination of screen cloth whip results in longer cloth life.

Where screening needs require screen cloth with square openings of 5/32" or over, Simplicity Ball Tray Screens employ bouncing rubber balls, trapped between the screen cloth and a retaining cloth. Vibration of the screen agitates the rubber balls, which knocks clay loose from the wires . . . no matter how wet the clay may be. Eliminate your clay screening problems permanently with Simplicity Heated or Ball-Type Screens. Both types have proven their economy and dependability in tough applications throughout the country.

For all details on these screens and other Simplicity conveying, screening or feeding equipment, write us today.

Simplicity

TRADE MARK REGISTERED

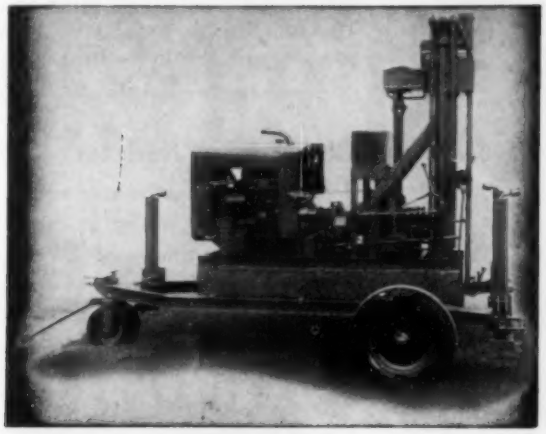
ENGINEERING CO. • DURAND 16, MICHIGAN

SALES REPRESENTATIVES IN ALL PARTS OF THE U. S. A. • FOR CANADA: Simplicity Materials Handling Limited, Guelph, Ontario. • FOR EXPORT: Rapson and Sloan, 50 Church St., New York 7, N. Y.

IN MINUTES . . . INSTEAD OF DAYS

Samples obtained from depths up to 100 feet with the all new

Parmanco



Model HV-172
Hydraulic Vertical Drill

- **HEAVY DUTY**
- **FOUR SPEED AUGER**
- **FINGER TIP CONTROL**
- **65 H. P. MOTOR**
- **ALL DRIVES MOUNTED ON TIMKEN ROLLER BEARINGS**

RUGGED COMPACT EASY TO OPERATE

●

THREE LEVELING JACKS TO INSURE STRAIGHT HOLES. FIELD PROVED

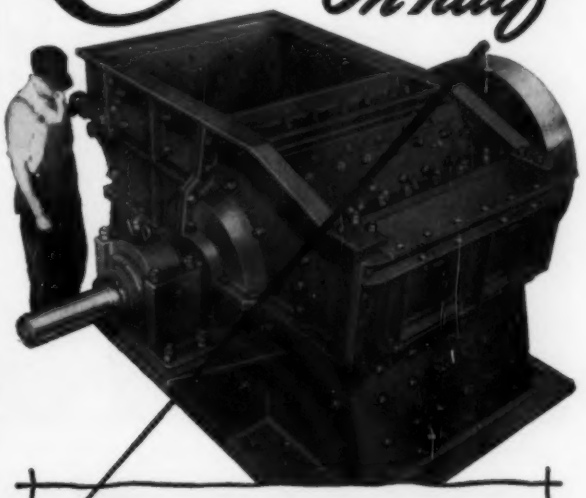
Complete Information on Request

SPECIALISTS IN AUGER TYPE DRILLS

PARIS MANUFACTURING COMPANY

PARIS, ILLINOIS

CUTS CRUSHING COSTS *In half*



•WILLIAMS
HEAVY DUTY
Hammer Mills

Finish grinds bank run clay and shale in *a single operation*—including hard lime particles, iron pebbles, tailing of all kinds. *Saves up to 75% of capital investment* by eliminating primary or secondary crushers, conveyors, elevators, extra drives, expensive foundations, housing and other equipment . . . *saves up to 50% on production cost*, cuts labor, upkeep, power, parts replacement, other profit-eaters!

No crusher built will stand up better under rugged continuous service. Extra heavy manganese steel breaker plates and liners—larger diameter shafts—other massive wear-resistant parts and reinforcements—all promise much greater return on every dollar invested in a Williams.

Send For Fact-Filled Catalog

ASK FOR DETAILS ON OTHER WILLIAMS EQUIPMENT

ROLLER, IMPACT and DRYER MILLS for fine and micron size grinding... HELIX-SEAL HAMMER MILLS for grinding dusty, wet and sticky materials ... AIR SEPARATORS for high output of precision fine grinding ... VIBRATING SCREENS, open or closed, for any size job ... COMPLETE "PACKAGED" PLANTS ready to install in existing buildings.

WILLIAMS PATENT CRUSHER & PULVERIZER CO.
2709 N. BROADWAY ST. LOUIS 6, MO.

Late News Notes

Buehler Region 4 SCPI Head

Otto J. Buehler of Dover, president of Fairfield Brick Co. at Zoarville, was elected president of Region 4, Structural Clay Products Institute, by trustees during their annual meeting in Canton recently.

Pictured are: Donald J. Renkert (left), who heads Metropolitan Brick Co., vice president; Buehler; Jack Clark, promotion director for the national SCPI; Douglas L. Whitlock, national board chairman, and James R. Platt of Canton, executive director of Region 4.

N. O. Geisinger of Dover continues as treasurer, a post he has held since Region 4 was organized in 1941. Paul N. Belden Jr. of Belden Brick Co. and C. M. Shafer of Stone Creek Brick Co. also are trustees.

Speaking at the dinner, Whitlock said 166,000 bricklayer apprentices are needed to keep pace with construction for the next 10 years. Region 4, with headquarters in Canton, maintains engineering offices in Cleveland, Columbus and Pittsburgh. The membership includes 26 brick and tile producers in 3 states.

Changes of Address

If you're due to change your address, be sure to avoid missing an issue of B&CR. Please notify us of your new address at least six weeks in advance of moving date. Write: BRICK & CLAY RECORD, 5 South Wabash Ave., Chicago 3, Ill. Be sure to give both old and new address, zone number, and your name.

THE PRIESTER TRUCK CRANE

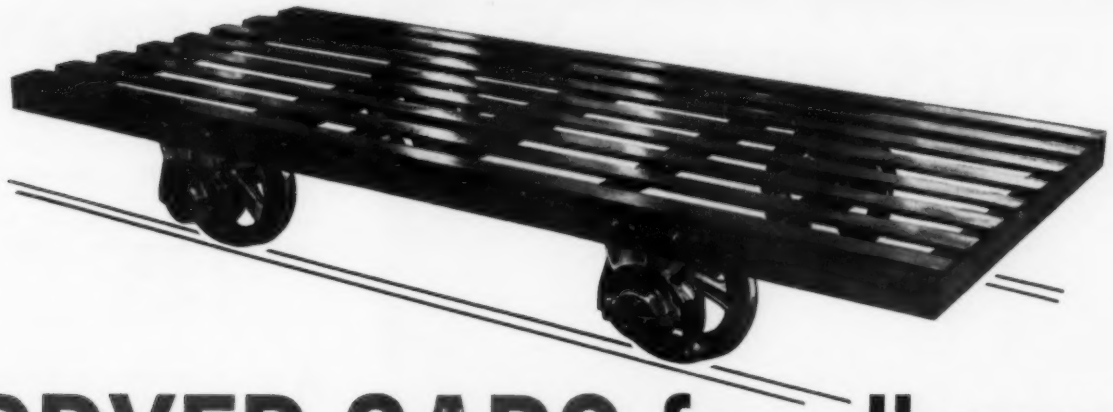
(PATENTED)

16 units of 500 bricks each unloaded by driver alone, merely pushing buttons.

Unloads off either side. Puts loads on sidewalk where they belong. Requires less than half the unloading space that other devices need. Handles brick or block unpalleted or palleted or packaged. Not necessary to move truck. Unloads one, two or all units at one place! No chipping or breaking bottom bricks or blocks. Gentle handling. For full details, ask for Bulletin TC53.

BRADNEY MACHINE CO., INC.

Middletown, N. Y.



DRYER CARS for all uses

Sturdy, smooth-rolling Chase Dryer Cars are available in single, double or triple deck styles or any adaptation needed in your plant. Every car is equipped with Chase patented flexible bearings, which are dust-proof and oil-retaining.

Send your specifications for complete information.

Chase

INDUSTRIAL CAR AND TRUCK BUILDERS FOR OVER SIXTY YEARS

FOUNDRY & MANUFACTURING CO.

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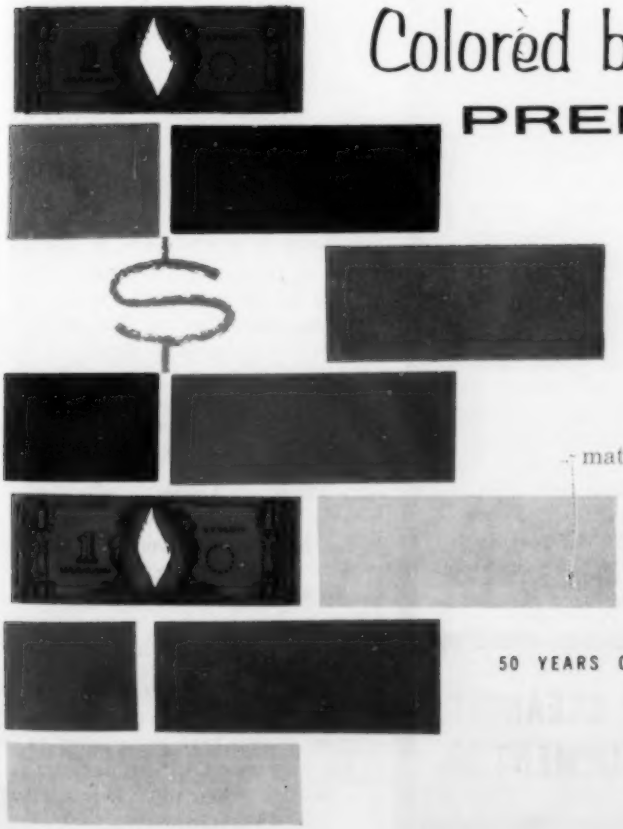


Colored brick brings PREMIUM PROFITS

At capacity? Want bigger profits on your volume? Colored brick is the answer.

Contemporary design demands color. Architects and builders are willing to pay a premium for materials offering this design freedom. *Now* is the best time to establish yourself in this booming market.

Pemco can supply you with quality materials for all types of color work. Pemco has formulated, or will develop for you, GLAZES, ENGOBES, and SAND COATING materials compatible with your clays. Write today for detailed information.

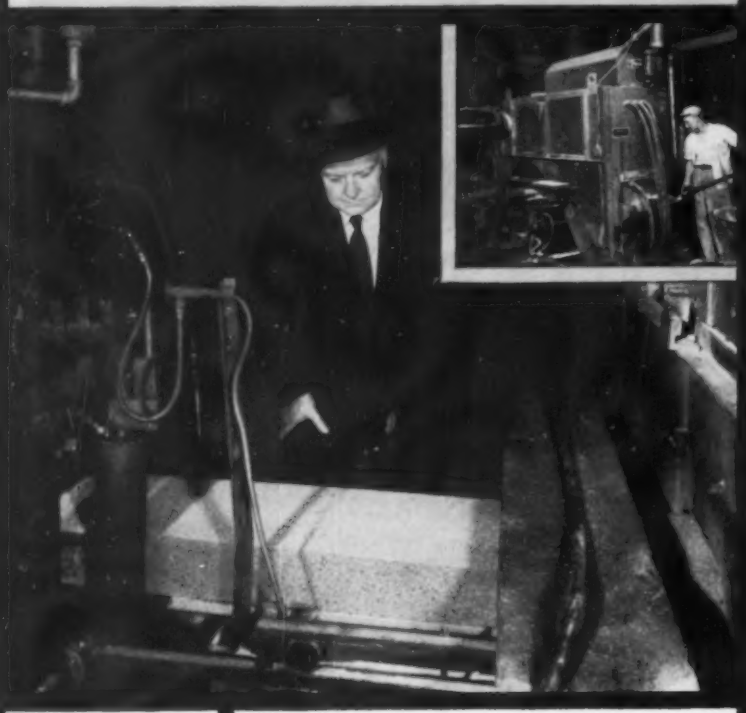
50 YEARS OF RESEARCH AND A FLAME

PEMCO

BALTIMORE 24, MARYLAND

CERAMIC FRITS AND INORGANIC COLORS

SELLS MORE BRICK!



Pangborn Brick Sanding Machine produces colored brick at low cost

In line with the growing demand for sand-coated brick, progressive brick producers are installing Pangborn Brick Sanding Machines. Designed to fit over the pug mill-to-cutter conveyor, this special cabinet uses air blast nozzles to coat the top and sides of the "green" column with colored sand.

It operates quickly—producing 12,000 to 13,000 sand-coated bricks per hour—and permits versatility of use. For example, it utilizes eight nozzles for Norman brick, adjusts quickly to six nozzles for efficient coating of standard brick. Also it handles screened particles for special effects. Brick manufacturers express complete satisfaction with this special Pangborn Cabinet . . . and the increased saleability it has given brick products.

Ask the Pangborn man in your area for details on Pangborn Brick Sanding Machines or write PANGBORN CORPORATION, 790 Pangborn Blvd., Hagerstown, Md. *Manufacturers of Blast Cleaning and Dust Control Equipment —Rotoblast Steel Shot and Grit.*

Pangborn **BLAST CLEANING EQUIPMENT**

The Fire Hazard in the Brick & Clay Industry

How Are You Fixed For Fires?

An Article By
Russell W. Gieseler, Chief Engineer
R. H. SQUIRE, INC.
Insurance Brokers
New York, New York

With the primary objective of serving our clients in the Brick and Clay Industry, we have made a constant study of all the available information on fires and fire losses involving clay products and ceramics plants.

It is interesting to note that, for many years, one or more fires in brick and clay plants have been listed and described in considerable detail in the annual summary of "Large Industrial Fires", i.e. those with losses in excess of $250,000. by the National Fire Protection Association. This Association receives and evaluates the reports on industrial and institutional fires, and summarizes the major lessons to be learned from its findings. The Association's detachment from the the insurance industry and the volume of information it collects permits the assumption of an objective but authoritative attitude and lends great weight to its conclusions. In short, it is a reliable fact-finding body in the field of Fire Protection.

It should be of interest to the clay industry as a whole and to many of you in particular to know that a study of these records shows a surprising repetition of five principal contributing factors to the severe fires which have proved so costly to Clay Products Manufacturers through production losses, increased insurance rates, etc. These five are:

Delayed Alarms
Unprotected Floor Openings
Inadequate Water Supplies for Fire Fighting
Lack of Horizontal Five Divisions
Delays in Shutting Off Gas

These are not listed in the order of their importance, because in many cases several have contributed to the size and extent of the damage.

In the sewer pipe industry par-

Continued on page 69

ticularly customary arrangement of processes and construction of buildings might be termed "hereditary". The multi-storied green goods drying building, housing the most vital production machinery of the plant, is an example. It has also been customary for the kiln firemen to be charged with the responsibility of watchmen during the night and on holidays. The very nature of the business, its need for space and proximity to clay sources calls for locations in isolated areas outside of or on the outskirts of towns.

This results in clay plants being supplied, if at all, by water mains of limited volume and with fire hydrants widely spaced or remote from the plant. In many cases it requires long runs by fire departments to reach the fire. There are delays because the available fire departments are volunteer in most cases and thus do not reach the scene until valuable mintes are lost.

Gas Fired Increases Fire Hazard

The introduction of gas fuel in recent years has unquestionably increased the efficiency of operation in many ways, but it has also introduced a new element to the rapid spread of fires and indeed in a few cases has been the primary cause of a fire attaining the questionable distinction of being classed as a "Major Industrial Loss". In this case, the gas company had removed the handwheels from the control valves in the meter house and an hour's delay in having the gas shut off resulted in the almost total destruction of the plant when several gas lines were broken during what appeared to be the last stages in controlling a moderate fire.

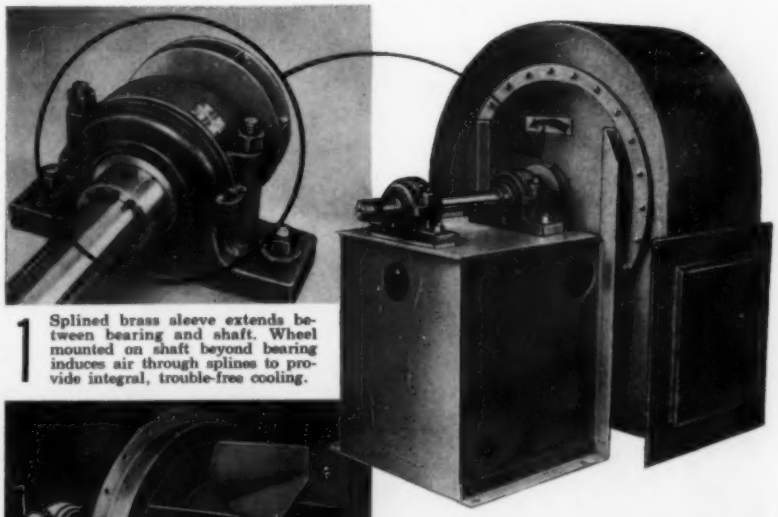
It is quite understandable that the very nature of the drying characteristics of sewer pipe necessitates the usual multi-stored building with its slatted floors and open stairs and elevators. That such a building will burn rapidly is undeniable once fire has had a fair start. That such a building is a difficult one in which to fight a fire and that such a building fire would require large volumes of water skillfully applied to effect control is self-evident.

Most of us, quite understandably, are prone to be somewhat complacent about our own plants. We find it dif-

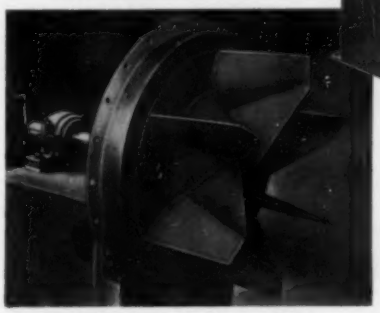
Continued on page 70

3 *outstanding features make this* ROBINSON EXHAUSTER

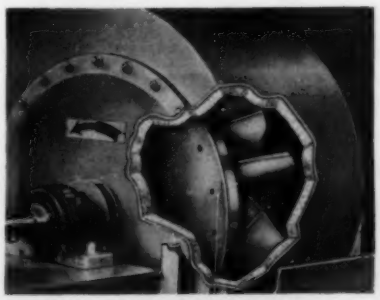
BEST for recirculating hot air in kilns—up to 1650°F.



1 Splined brass sleeve extends between bearing and shaft. Wheel mounted on shaft beyond bearing induces air through splines to provide integral, trouble-free cooling.



2 Cartridge type wheel assembly is removed from the drive side of the exhauster. Inspection and maintenance of both wheel and exhauster is simplified and speeded, without entering kiln.



3 Steel outer skin and alloy inner casing are separated by high-temperature insulating material, minimizing heat loss in kiln air, and reducing heat radiation and conduction to other parts.

Three unusual features—exclusive integral self-cooling, cartridge-type wheel assembly, and carefully engineered use of insulation and alloys—help Robinson High-Temperature Exhausters give unsurpassed efficiencies in recirculating hot air in kilns. These important features are the results of Robinson's long experience in improving air handling procedures in the ceramic industry's high temperature operations.

Because a successful kiln or dryer design depends heavily on proper air handling, Robinson engineers will work in a consulting capacity with your designers and builders. It is added assurance that you will get the most economical and efficient firing and drying facilities.

If you are building new facilities, or refurbishing existing ones, specify Robinson—for superior air handling matched to proper kiln and dryer design.
Write today for literature.

MEMBER OF AMCA

INDUSTRIAL FANS • BLOWERS • EXHAUSTERS

ROBINSON VENTILATING CO.

119 HENDERSON STREET, ZELIENOPLE, PA.

ficult to imagine how a fire could start in our own buildings. We have the feeling that while it can happen to the other fellow it can't happen to us. However, we must recognize that these buildings are susceptible to quick destruction and that the clay dust which "can't burn" and covers everything does not make the buildings "fireproof". An electrical defect, a hot bearing, a cigarette, an oily rag, or any number of other of the so-called "common hazards" *can* ignite our buildings. We must also recognize that any of these can be the cause of ignition at night, on a holiday, or even when the plant is operating.

Because fire can start, because fire can quickly spread through a building, it follows that detection at its incipiency is vital, so vital that it means the difference between the possibility of saving the building and maintaining production and a disastrous loss with a major interruption of production. Whatever insurance may be collectible can but partially salve the wound to the business.

Prompt discovery and the immediate marshalling of all the fire fighting forces available are the only means of preventing disaster. Whether it is a kiln fireman, a foreman, or some other employee who has duties other than watching for fire, it is human nature to consider such fire detection as secondary to his other duties. It is distastful for him to have to make long trecks through the plant at closely spaced regular intervals, and it soon becomes a frequently neglected chore. Unless there is some way of enforcing a patrol by means of the recording of visits to all parts of the plant on some sort of watchman recording apparatus, such patrols become purely an occasional perfunctory operation.

Sound Alarm Immediately

Even the prompt discovery of a fire can be followed by disaster if convenient and reliable means are not available for the prompt transmission of an alarm to other employees and to the fire department. It might be well to mention, at this point, that part of "Delayed Alarms" category is the failure on the part of employees to report fire immediately and for the alarm to be transmitted to the fire department. Too many fires became major losses because employees FIRST tried to fight the fire with hand extinguishers and summoned help only when they realized they were trying to cope with something beyond their ability.

We have now progressed to the point where we will take it for granted that employees will discover the fire promptly and will transmit the alarm immediately to the nearest fire department, and we will presume that the response is quick. The next question is whether the fire department can render the assistance needed and it would like to provide. It is necessary that there be adequate water supplies available or it can render little or no aid. Adequate water supplies can be from public water mains, from ponds, or from other sources, but the importance of the word "adquate" cannot be over emphasized. The fire department should know all

Continued on page 71

TYLER service offers 53,000 ways to cut screening costs

To meet all the different requirements for sizing, grading, and separating materials, W. S. Tyler has developed wire cloth in innumerable types, sizes, metals, meshes, and designs. Today, over 53,000 different specifications are available.

Matching the *right* wire cloth to your specific needs is the service provided by your Tyler sales engineer. From Tyler's unequalled range of product he has the know-how and experience to give you results.

That's *Tyler Screening Service*—use it to cut your production costs.

WOVEN WIRE SCREENS • SCREENING MACHINERY
TESTING SIEVE EQUIPMENT

TYLER

The W. S. TYLER Company • *Cleveland 14, Ohio*

OFFICES: New York • Chicago • Boston • Philadelphia • Atlanta • Dallas • Los Angeles • San Francisco
Baltimore • Birmingham • Houston • Minneapolis • Pittsburgh • Salt Lake City • The W. S. Tyler Company
of Canada, Limited, St. Catharines, Ontario • OFFICE: Montreal

about these supplies as well as their limitations, so that what ever water is available can be used most effectively.

Many plants have brightly painted fire hydrants on their properties that reassure them and make them feel safe. Until the first department that will respond has made an on-the-scene test of the supplies and has decided how it will use the supplies in case of a fire at your plant, you cannot be sure that the protection you have available will be used to the best advantage. The man in charge of fighting the fire will be the "Cief" of your nearest fire department. He is a man whose acquaintance and interest you should solicit earnestly. He should be fully informed about the water supplies, about your own fire fighting equipment, how much trained and intelligent assistance he can expect from your own employees, and he should know all these things about the plant before he arrives on the scene. It might be proper to ask, at this point, whether the "Chief" could expect any trained assistance from your employees, and, if not, whether the lack of such assistance might be a disastrous omission on your part.

Based upon our long and intimate experience in the clay field, we have concluded that the number of fire losses in your industry can be reduced substantially and that this reduction will pay worth-while dividends, especially in the lowering of insurance rates. We hope that this necessarily generalized article will provoke objective thinking about conditions at your plant.

Handles 125,000 Brick A Day

Now, a single man can reportedly handle some 125,000 brick per day...

That's the amount set by an operator using the new Stock-Hauler, manufactured by the American Truck Body Company, Inc. of Martinsville, Va.

Working at a normal rate of speed, one operator required only three and three-quarters minutes to load 3,000 brick with the Stock-Hauler, drive two-tenths miles to the storage yard, unload and return to the kiln for the next load.

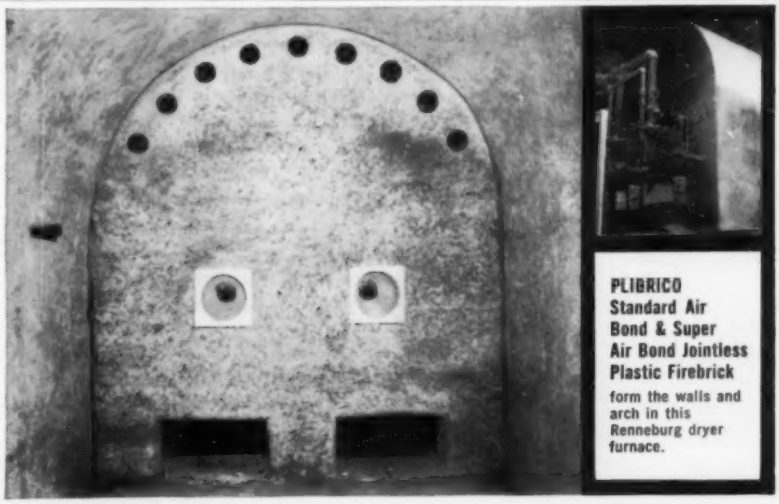
Moving the 125,000 brick during an eight-hour working day, the Stock-Hauler averaged stocking 15,625 brick per hour. Each trip required about 12 minutes.

The number of brick the Stock-Hauler can load is controlled only by the rate of speed by which the hackers can remove the brick from the kiln cars and put them into Pack-Hauler cubes. No strapping or dunnage is required.

Designed specifically for stock Pack-Hauler cubes in the yard for future Pack-Hauler delivery, the new Stock-Hauler can transport six times the ware handled by conventional methods.

Julien With Carborundum Co.

Dr. Hiram Paul Julien, formerly head of research on static electricity at Esso Research and Engineering Company, Linden, New Jersey, has been appointed Manager of Advance Studies Department in the Technical Branch of The Carborundum Company's Bonded Abrasives Division, it was announced by Mr. Fred A. Upper, Manager of the Branch.



...at internationally known chemical plant

"Air Bath" lengthens life of dryer furnace

The nine air ports across the top of this furnace let tempering air enter and circulate beneath the arch. Heat build-up is reduced and the furnace lining lasts longer. Innovations of this kind are typical of Plibrico engineering ... ideas born of years of specialized refractory/engineering experience.

Monolithic lining costs less ... it is free from joints which cause linings to bulge and eventually collapse. And this Plibrico lining is securely anchored, too. Linings of Plibrico plastic refractory materials, and castables, install quickly. They conform easily to all contours and save the need for costly special shapes.

Single source guarantee ... When you turn over full responsibility for top performance to Plibrico you can be sure of a properly integrated installation ... years of engineering experience/the right materials for each furnace zone/careful supervision and installation.

Save money on your next installation, contact your local Plibrico Field Engineer ... he can engineer refractory linings for any heat enclosure. WRITE FOR CATALOG 73 packed with cost-saving histories.

Plibrico REFRACTORIES

PLIBRICO CO., 1816 Kingsbury, Chicago 14 • Canadian Plant: New Toronto, Ont.
Plibrico Sales and Service Throughout the World
REFRACTORY PRODUCTS • ENGINEERING • CONSTRUCTION

PREVENT CRIPPLING DISEASES
BIRTH DEFECTS
ARTHRITIS
POLIO

JOIN THE NEW MARCH OF DIMES
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THE NATIONAL FOUNDATION

More Industry News

J. D. Ramsay Dies

J. D. Ramsay, former President and Director of North American Refractories Company, died suddenly at his home at Shaker Heights, Ohio on January 31. Ramsay was born in Ligonier, Pa., 83 years ago and was educated there. After graduating from high school he taught school in Fairfield and Bolivar, Pa. One of his students was Miss Margaret E. Huston, whom he married in 1900.

In 1899 Ramsay joined the Reese-Hammond Fire Brick Co. of Bolivar as a salesman. He was later sent to Pittsburgh and made general sales manager of the company. Ramsay became associated with the Elk Fire Brick Company of St. Marys, Pa. in 1904 and was an officer of that company until 1929 when it joined other companies in a merger to form the North American Refractories Company. As the spark plug in negotiating the merger, Ramsay was the first president of North American Refractories Company, and held the position of top officer and director until his retirement in 1947.

He is survived by his wife Margaret, one daughter and two sons. His son Willis R. Ramsay is a Vice President and Director of North American Refractories Company, with headquarters at Cleveland, Ohio.

Sullivan Receives Bleininger Award

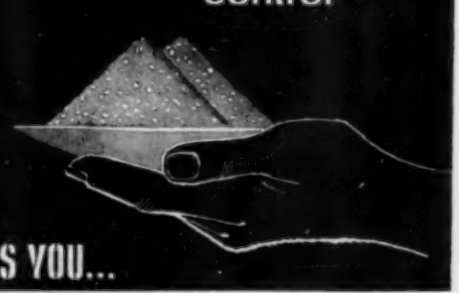
John D. Sullivan, Technical Director at Battelle Memorial Institute, Columbus, has been named the 1960 recipient of The Albert Victor Bleininger Award. The announcement was made at the December 11th meeting of the Pittsburgh Section of the American Ceramic Society by Richard W. Ricker, Chairman.

This award, the highest honor conferred in this country for distinguished achievement in the field of ceramics, is presented annually by the Pittsburgh Section.

Prior to joining Battelle in 1931, Sullivan was employed by the U. S. Bureau of Mines holding positions as Analyst at the Northwest Experiment Station from 1922-23; as Assistant Physical Chemist at the Pacific Experiment Station, 1923-27.

Get Better Production and Lower Costs with
UNIVERSAL HEATED SCREENS

Universal Screens with the efficient Unilec heating jacket are a screening combination that get results with the toughest materials. You can not only eliminate blinding, but screen finer—and at far lower cost per square foot of screening area!
Write today for details!
UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

EXACTING production control

BRINGS YOU...
HOMMEL WATER-QUENCHED POTTERY FRIT
Added protection against glaze crawling is yours with Hommel water-quenched frit. It's fast ground. You'll find Hommel frits completely free of metallic iron particles . . . a glaze with lower solubility. Gives a smoother finish and better quality . . . at lower cost. Write for samples, with or without glaze stains.
"The World's Most Complete Ceramic Supplier" BCR-240
THE O. HOMMEL CO.
PITTSBURGH 30, PA.
WEST COAST • 4747 E. 49th STREET • LOS ANGELES

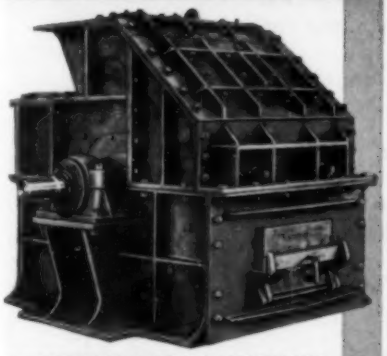
American HAMMERMILLS

offer

HIGH CAPACITY REDUCTION

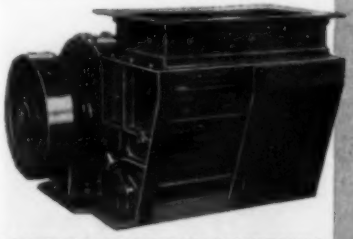
at

LOW OPERATING COST



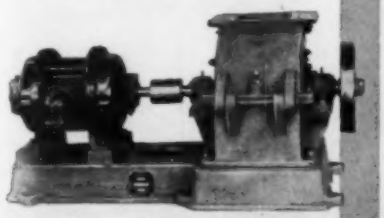
AMERICAN ACS HAMMERMILL

Capacities to 250 tons per hour



AMERICAN "30" HAMMERMILL

Capacities to 100 tons per hour



AMERICAN LABORATORY MILL

Capacities to 2000 lbs. per hour

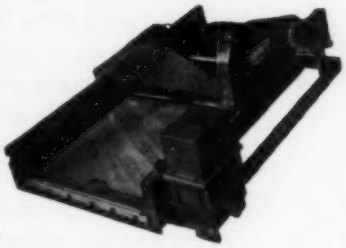
WHAT IS YOUR CRUSHING PROBLEM?

The American Engineering Department will be happy to analyze your reduction problems, make test runs if necessary, and offer specific recommendations. No obligation.

WRITE for complete literature on American Hammermills.

American PULVERIZER COMPANY

Even the Little Things Make the Leahy® Screen Profitable for You



THE Leahy NO-BLIND VIBRATING SCREEN

— offers —

INTEGRATED HEAT SCREENING

It's easy to spot and use the advantages that are obviously needed for effective screening of difficult and sticky clays and shales. **Correct vibration and integrated heating of the screen jacket are basic.**

But you only get top efficiency when top considerations are identified and made available in perfected equipment. The Leahy screen is unique in providing (a) differential vibration that snaps wedging particles loose 1600 times per minute and (b) most direct and efficient jacket heating, by integration of the transformer and ample bus bar arrangements that eliminate bothersome flexible connectors and assure maximum power economy as well as optimum screening performance. Summed up this is why the Leahy screen is so profitable to use. Send for Bulletin 16-EH.

THE DEISTER CONCENTRATOR CO., INC.

The Original Deister Co., Est., 1906

913 GLASGOW AVENUE — FORT WAYNE, INDIANA

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(Granular and Milled)

THIS TRADEMARK HAS BECOME A HALLMARK

In the Ceramic Industry, this familiar trademark has become a Hallmark of Zircon.

It guarantees purity, uniformity and prompt service. As Sterling is to Silver, Orefraction is to Zircon.

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- **Magnetite**
- **Chromite**
- **Manganese**

We have recently built a completely modern plant in Brownsville, Texas, to process minerals for the brick trade to size and high chemical specifications. Custom grinding facilities are available.

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Firm_____
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- Enables you economically to satisfy growing demand for highly profitable rockface brick.
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WANTED—PLANT

Wanted to lease plant manufacturing heavy clay products, preferably brick. Reply to Post Office Box 137, Dover, Ohio.

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Wanted-Experienced man to serve as Executive Secretary of South Carolina Promotional Agency, Clay Products Service. Agency background not essential. Compensation adequate. Give full information with application. Reply to Joe H. Patrick, 507 E. Creswell Ave., Greenwood, S. C.

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Employment Manager

GLADDING, McBEAN & CO.

2901 Los Feliz Blvd. Los Angeles 39, Calif.

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"Experienced mechanical engineer or master mechanic wanted to head Die Design Department for refractory producer. Applicant must be able to design forming equipment for refractory shapes made by all standard brick making processes. Knowledge of brick making equipment essential. Engineering degree helpful but not required. Salary commensurate with experience and ability." Write Box 2-AAI c/o Brick & Clay Record.

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WANTED—HELP

Wanted—Ceramic Engineer for Superintendent to operate plant with 2 Miller tunnel kilns for brick. In plant producing 80,000 shale face and common brick daily. Plant built in 1953 to 1955. Working mostly colored help. Need working type superintendent, no office type. Furnished to right man house, light water and heat. Interested applicants give resume and salary expected. Write Cunningham Brick Company, Route 2, Thomasville, North Carolina, or phone 6181 or 6110.

"Assistant Production Manager—Excellent opportunity for man between twenty-five and forty years of age who is willing to move around multiple clay and shale plants. Advise experience and references." Address Box 1-AAD care of Brick & Clay Record.

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WANTED—Used type 2BT F-R-H Drain Tile Cutter. 13½" Cut. Must be in first class condition. Chehalis Brick & Tile Co., Chehalis, Wash.

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SCREENS, Tyler Hummer, Cedar Rapids, Sturtevant.

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SINGLE ROLL CRUSHER—
ROTARY DRYERS & KILNS—2x20, 3x30, 6x40,
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300 Single Deck Dryer Cars Ball Bearings
5 Bickerstaff Brick Forks

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Good Condition
Ready to go

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P.O. Box 9787 Jackson, Miss.
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PULLEYS of various sizes, face and bores.
ELECTRIC MOTORS, various H.P. and speeds.
BREWER Heavy Duty Conical Roll Crusher.
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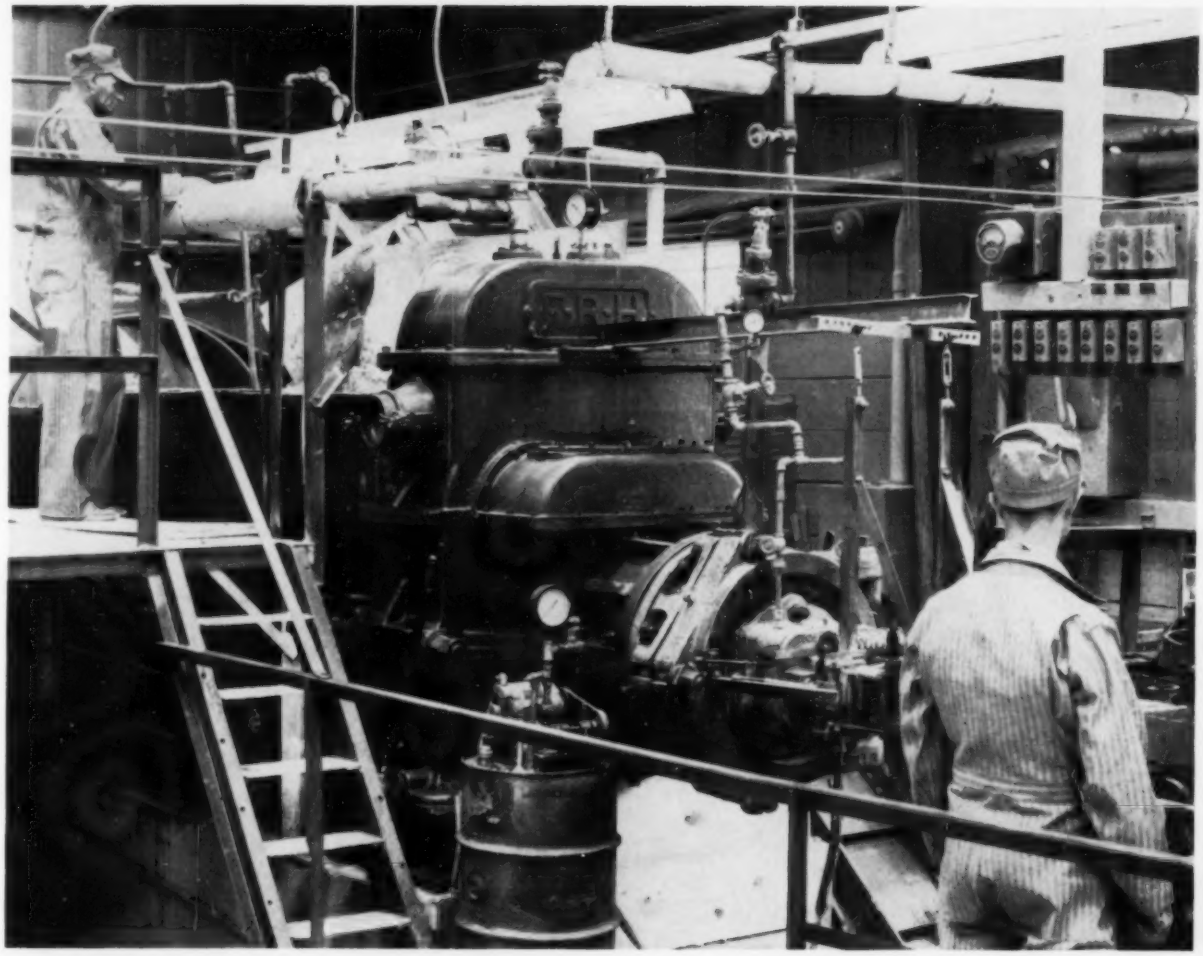
SUSTAINING ASSOCIATE SCPI

J. C. Steele & SONS Statesville, N. C.

Pacific Agents: Walter C. Stoll, 5028 Alhambra Ave., Los Angeles 32, Calif.

THE BEST IN CLAY MACHINERY SINCE 1889



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F-R-H

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For 100% Operating Efficiency

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CUTS UP TO 18,000 BRICKS PER HOUR

Big volume cutting with precision accuracy . . . these words best describe the "American" No. 858 Automatic Electric Cutter. This unit will cut brick or tile up to 14"x14". The electric control makes each cut perfect . . . there is no chance for error.

The "American" Automatic Electric Cutter has an hourly capacity of from 3,000 to 18,000 bricks . . . 23 standard bricks per cut. This unit is particularly suited for plants specializing in the production of "SCR" brick.

The "American" No. 858 is a complete unit . . . there are no extras to buy. Wire holders and platens are adjusted easily for any size requirement, and the base adjusts up or down to suit any cross section of clay.

Other features of the "American" No. 858 Automatic Electric Cutter include: magnetic clay bar clamp for perfect cut . . . hinged measuring frame can be lifted to permit die or front change . . . there are no valves or gears . . . anti-friction bearings are used throughout.

The "American" No. 858 Cutter can add to the production efficiencies of your plant. Before you buy check "American" . . . specified as first choice by clay production men.

American CLAY MACHINERY

A Division of HUBER-WARCO COMPANY
Marion, Ohio, U.S.A.

Plants in Marion and Bucyrus, Ohio
Cable Address: HUBARCO

OVER A CENTURY OF EXPERIENCE IN THE MANUFACTURE OF CLAY MACHINERY